VACCINE	CONTAINS	BREAKDOWN
Adenovirus ***Vaccine indicated for active immunization for the prevention of febrile acute respiratory disease caused by Adenovirus Type 4 and Type 7.	human-diploid fibroblast cell cultures (strain WI-38), Dulbecco's Modified Eagle's Medium, fetal bovine serum, sodium bicarbonate, monosodium glutamate, sucrose, D-mannose, Fructose, dextrose, human serum albumin, potassium phosphate, plasdone C, anhydrous lactose, microcrystalline cellulose, polacrilin potassium, magnesium stearate, cellulose acetate phthalate, alcohol, acetone, castor oil, FD&C Yellow #6 aluminum lake dye	Human-diploid fibroblast cell cultures (strain WI-38) is a diploid human cell strain composed of fibroblasts derived from lung tissue of a 3-months gestation aborted female fetus (https://en.wikipedia.org/wiki/WI-38) 2) Dulbecco's Modified Eagle's Medium is the mostly broadly suitable medium for many adherent cell phenotypes among defined media for cell and tissue culture. The Dulbecco's modification is an enhanced supplementary formulation that boosts select amino acid and vitamin content of the original Eagle's medium is up to fourfold. Our selection includes a range of glucose concentrations, as well as formulations with and without L-glutamine. Products without the pH indicator phenol red are available for estrogen-sensitive applications, and our comprehensive offering includes convenient, ready-to-use liquid formats, as well as economical powdered media for easier storage and longer shelf life (https://www.sigmaaldrich.com/life-science/cell-culture/classical-media-salts/dmem.html) 3) Fetal bovine serum is the liquid fraction of clotted blood from fetal calves, depleted of cells, fibrin and clotting factors, but containing a large number of nutritional and macromolecular factors essential for cell growth. Bovine serum albumin is the major component of FBS. Growth factors in FBS are essential for the maintenance and growth of cultured cells. FBS also contains a variety of small molecules like amino acids, sugars and lipids and hormones (https://www.labome.com/method/Fetal-Bovine-Serum.html) 4) Sodium Bicarbonate is a soluble white powder used in fire extinguishers and effervescent drinks and as a leavening agent in baking (https://www.google.com/search?ei=9obCXOCRMKmm_Qa-2ZCYCw&q=what+is+sodium+bicarbonate&oq=what+is+sodium+bicarbonate&gs_l=psy-ab.3..0l10.1136.5627..5945...0.0..2.301.4144.0j7j11j1.....0....1j2..gws-wiz.....0i71j0i67j0i22i30j0i131.CD1a86JDCQg) 5) Monosodium Glutamate is a compound that occurs naturally as a breakdown product of proteins and is used as a flavor enhancer in food. A traditional ingredient in Asian cooking, it was originally obtained from seaweed but is now mainly made from bean and cereal protein (MSG) (https://www.google.com/search?ei=hofCXPrHGKu2ggen-q-ADA&q=what+is+monosodium+glutamate&oq=what+is+monosodium+glutamate&gs_l=psy-ab.3..0l10.20151.24465..24729...0.0..0.95.1481.19.....0....1j2..gws-wiz.....0i71j0i67j0i131.N0khjoIbAI4) 6) Sucrose is a compound which is the chief component of cane or beet sugar (https://www.google.com/search?ei=-IfCXLzbA8K1ggfi_bLIAw&q=what+is+sucrose&oq=what+is+sucrose&gs_l=psy-ab.3..0l10.80669.85255..85490...0.0..0.99.1695.21.....0....1j2..gws-wiz.....0i71j0i67j0i131.z2Ien8_0owc)

Created by Karissa Desiderio of Wilmington, Delaware 19803. 4/2019

		7) D-mannose is a kind of sugar that is related to glucose. D-mannose is used for preventing urinary tract infections and treating carbohydrate-deficient glycoprotein syndrome, an inherited metabolic disorder (https://www.webmd.com/vitamins/ai/ingredientmono-1114/d-mannose) 8) D-Fructose is a monosaccharide in sweet fruits and honey that is soluble in water, alcohol, or either. It is used as a preservative and an intravenous infusion in parenteral feeding (https://pubchem.ncbi.nlm.nih.gov/compound/D-fructopyranose) 9) Dextrose is a prescription sterile, nonpyrogenic solution for fluid replenishment and caloric supply for intravenous and/or oral administration and as a treatment of low blood sugar (https://www.rxlist.com/consumer_dextrose/drugs-condition.htm) 10) Human serum albumin is the serum albumin found in human blood. It is the most abundant protein in human blood plasma; it constitutes about half of serum protein. It is produced in the liver. It is soluble in water and monomeric (https://en.wikipedia.org/wiki/Human_serum_albumin) 11) Potassium Phosphate is a medication that helps control the amount of calcium in the body and urine. It works by making the urine more acidic. It is used to prevent calcium kidney stones. It is also used to decrease the amount of ammonia in urine, thereby reducing odor and skin irritation caused by high-ammonia urine. This medication is also given to help certain antibiotics for bladder infections work better (https://www.webmd.com/drugs/2/drug-63290/potassium-phosphate-monobasic-oral/details) 12) Plasdone C is derived from a group of water-soluble polymers based on the compound N-vinyl pyrrolidone. It is used as a stabilizer in vaccine production (https://www.google.com/search?ei=vInCXO6FBLKd_QaO-YXoDw&q=what+is+plasdone+C&oq=what+is+plasdone+C&gs_l=psy-ab.3..0.863.5310..5504...0.0..0.92.1463.20.....0....1j2..gws-wiz.....0i71j0i67j0i131.WUUOnO6L7Tc) 13) Lactose Anhydrous is found in some tablets and other kinds of drugs and generally does not cause any health problems, but it can be problematic if you are lactose intolerant (https://healthfully.com/446556-what-is-anhydrous-lactose.html).

		14) Microcrystalline cellulose is a term for refined wood pulp and is used as a texturizer, an anti-caking agent, a fat substitute, an emulsifier, and extender, and a bulking agent in food production. The most common form is used in vitamin supplements or tablets. It is also used in plaque assays for counting viruses, as an alternative to carboxymethylcellulose (https://en.wikipedia.org/wiki/Microcrystalline_cellulose). 15) Polacrilin potassium is an ion exchange resin used in oral pharmaceutical formulations as a tablet disintegrate. It is a weekly acidic cation exchange resin. Chemically, it is a partial potassium salt of a copolymer of methacrylic acid with divinyl benzene (https://www.google.com/search?ei=GIvCXNeCAaq7ggf41KewBA&q=what+is+polacrilin+potassium&oq=what+is+polacrilin+potassium&gs_l=psy-ab.3..0.763.5896..6045...0.0..0.107.1932.26j1.....0....1j2..gws-wiz.....0i71j0i67j0i10j0i131.r1MrxBUgT8k). 16) Magnesium Stearate is a fine white powder that sticks to your skin and is greasy to the touch. It's a simple salt made up of two substances, a saturated fat called stearic acid and the mineral magnesium. Stearic acid can also be found in many foods such as: chicken, eggs, cheese, chocolate, walnuts, salmon, cotton seed oil, palm oil, and coconut oil. Magnesium stearate is commonly added to many foods, pharmaceuticals and cosmetics. In medications and vitamins, its primary purpose is to act as a lubricant (https://www.healthline.com/health/magnesium-stearate#purpose). 17) Cellulose acetate phthalate (CAP), also known as cellacefate and cellulosi acetas phthalas, is a commonly used polymer phthalate in the formulation of pharmaceuticals such as the enteric coating of tablets or capsules and for controlled release formulations. It is a cellulose polymer where about half of the hydroxyls are esterified with acetyls, a quarter are esterified with one or two carboyls of a phthalic acid, and the remainder are unchanged. It is a hydroscopic white to off white free flowing powder, granules, or flakes. It is tasteless and odorless, though may have a weak odor of acetic acids. Its main use in pharmaceutics is with enteric formulations. It can be used together with other coating agents. Cellulose acetate phthalate is commonly plasticized with diethyl phthalate, a hydrophobic compound, or triethyl citrate, a hydrophilic compound; other compatible plasticizers are various phthalates, triacetin, dibutyl tartrate, glycerol, propylene glycol, tripropioin, triacetin citrate, acetylates monoglycerides (https://en.wikipedia.org/wiki/Cellulose_acetate_phthalate). 18) Acetone is a colorless liquid also known as propane, is a solvent used in manufacture of plastics and other industrial products. Acetone may also be used to a limited extent in household products, including cosmetics and personal care products, where its most frequent application would be in the formulation of nail polish removers. Acetone occurs naturally in the human body as a byproduct of metabolism (https://www.chemicalsafetyfacts.org/acetone/).

		19) Castor oil is a vegetable oil that is used for a wide range of cosmetic and medical purposes. It is said to provide health benefits for the face and skin (https://www.medicalnewstoday.com/articles/319844.php). 20) FD&C Yellow No. 6 Aluminum Lake is a color additive used for drug dosage forms such as tablets and capsules. It is also approved for use in foods as cosmetics. FD&C Yellow No. 6 Lake imparts a reddish yellow color to medicinal dosage forms.
Anthrax (Bithorax) ***An immunization used to help prevent anthrax disease in people exposed to the bacteria through the skin or lungs.	amino acids, vitamins, inorganic salts, sugars, aluminum hydroxide, sodium chloride, benzethonium chloride, formaldehyde	Amino acids are organic compounds that combine to form proteins. Amino acids and proteins are the building blocks of life. When proteins are digested or broken down, amino acids are left. The human body uses amino acids to make proteins to help the body: breakdown food, grow, repair body tissue, perform many other body functions (https://medlineplus.gov/ency/article/002222.htm). Inorganic salts are an essential nutrition for human and animals. They are mostly in the combination form when in food, and often dissociated into inorganic salt ions in the body fluid. There are also a small amount of inorganic salts in the body fluid combined with protein, especially trace elements (https://www.google.com/search?ei=OZDCXJeQOeSO5wK0_qrYBQ&q=what+are+inorganic+salts&oq=what+are+inorganic+salts&gs_l=psy-ab.3..0i7i30j0j0i7i30l4j0j0i8i30l3.1332.9126..9438...9.0..3.268.3773.6j8j8.....0....1j2..gws-wiz.....0..0i71j0i67j0i131j0i22i30.wcrRAy5mwvI) Aluminum hydroxide is used for the relief of heartburn, sour stomach, and peptic ulcer pain and to promote the healing of peptic ulcers (https://medlineplus.gov/druginfo/meds/a699048.html) Sodium chloride is a colorless crystalline compound occurring naturally in seawater and halite, common salt (https://www.google.com/search?ei=EZHCXKbIHobW5gLgoKuwAg&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0l10.2864.5624..5770...0.0..0.232.1060.6j1j2.....0....1j2..gws-wiz.....0i71j0i67j0i131.RtuXgU4lLKE) Benzethonium Chloride, also known as hyamine is a synthetic quaternary ammonium salt. This compound is an odorless white solid, soluble in water. It has surfactant, antiseptic, and anti-infective properties, and it is used as a topical antimicrobial agent in first aid antiseptics. It is also found in cosmetics and toiletries such a mouthwash, anti-itch ointments, and antibacterial moist towelettes. Benzethonium chloride is also used in the food industry as a hard surface disinfectant (https://en.wikipedia.org/wiki/Benzethonium_chloride)

		Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms-bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of value-added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/)
BCG (Tice) ***This medication is used to treat a certain type of bladder cancer and prevent it from returning. It is also used to prevent another type of bladder cancer from returning after surgery to remove it.	glycerin, asparagine, citric acid, potassium phosphate, magnesium sulfate, iron ammonium citrate, lactose	Glycerin is a trihydroxy sugar alcohol found in the natural fats of vegetables and animals. Physically it's a highly viscous transparent liquid with a sweet taste. It's highly soluble in both water and alcohol, and is also a great solvent for other materials, making it useful for the preparation of tinctures and foods (https://articles.mercola.com/vitamins-supplements/glycerin.aspx) Asparagine is an amino acid that is used in the biosynthesis of proteins. It contains an amino acid group, a carboxylic acid group and a side chain carboxamide, classifying it as a polar alphatic amino acid. It is non-essential in humans, meaning the body can synthesize it. It is encoded by the codons AAU and AAC (https://en.wikipedia.org/wiki/Asparagine) Citric acid is found naturally in citrus fruits, especially lemons and limes. It's what gives them their tart, sour taste. A manufactured form of citric acid is commonly used as an additive in food, cleaning agents and nutritional supplements (https://www.healthline.com/nutrition/citric-acid) Potassium Phosphate is a medication that helps control the amount of calcium in the body and urine. It works by making the urine more acidic. It is used to prevent calcium kidney stones. It is also used to decrease the amount of ammonia in urine, thereby reducing odor and skin irritation caused by high ammonia urine. This medication is also given to help certain antibodies for bladder infections work better (https://www.webmd.com/drugs/2/drug-63290/potassium-phosphate-monobasic-oral/details) Magnesium Sulfate is a naturally occurring mineral used to control low blood levels of magnesium. Magnesium sulfate injection is also used for pediatric acute nephritis and to prevent seizures in severe pre-eclampsia, eclampsia, or toxemia of pregnancy (https://www.rxlist.com/consumer_magnesium_sulfate_mgso4/drugs-condition.htm) Iron ammonium, citrate aka ferric ammonium citrate is a yellowish brown to red solid with a faint odor of ammonia. It is soluble in water. The primary hazard is the threat to the environment. Immediate steps should be taken to limit its

		spread to the environment. It is used in medicine, in making blueprints, and as a feed additive (https://cameochemicals.noaa.gov/chemical/3462) Lactose is a sugar present in milk. It is a disaccharide containing glucose and galactose units (https://www.google.com/search?ei=S5XCXIPUJqrs5gLTh4DoAg&q=what+is++lactose&oq=what+is++lactose&gs_l=psy-ab.3..0l10.1946.8432..8697...3.0..1.283.3322.13j6j5.....0....1j2..gws-wiz.....0i71j0i22i30j0i131.1X8jcPK611A)
Cholera (Vaxchora) ***Only FDA approved vaccine for the prevention of cholera. Cholera, a disease caused by Vibrio cholerae bacteria is acquired by ingesting contaminate water or food and causes a watery diarrhea that	casamino acids, yeast extract, mineral salts, anti-foaming agent, ascorbic acid, hydrolyzed casein, sodium chloride, sucrose, dried lactose, sodium bicarbonate, sodium carbonate	Casamino acids is a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media. It has all the essential amino acids except tryptophan which becomes almost destroyed when digested with sulfuric or hydrochloric acid. Casamino acids is similar to tryptone, the latter differing by being an incomplete enzymatic hydrolysis with some obligopeptides present, while casamino acids is predominantly free amino acids (https://en.wikipedia.org/wiki/Casamino_acid) Yeast extract is the common name for yeast products made by extracting the cell contents they are used as food additives for flavorings, or as nutrients for bacterial culture media. They are often used to create savory flavors and umami taste sensations and can be found in a large variety of packaged foods including frozen meals, crackers, snack foods, gravy, stock and more. Yeast extracts in liquid form can be dried to a light paste or a dry powder (https://en.wikipedia.org/wiki/Yeast_extract) Mineral salts are inorganic salts that need to be ingested or absorbed by living organisms for healthy growth and maintenance. They comprise the salts of the trace elements in animals and the micronutrients of plants (https://www.google.com/search?ei=CZfCXOiHCoLu_Qa17aCYCA&q=what+is+mineral+salts&oq=what+is+mineral+salts&gs_l=psy-ab.3..0j0i131l2j0j0i131j0l5.1231.5407..5414...0.0..0.305.3287.0j6j8j1.....0....1j2..gws-wiz.....0i71.OCCRehtmeEI) A defoamer or an anti-foaming agent is a chemical additive that reduces and hinders the formation of foam in industrial process liquids. The terms anti-foam and defoamer are often used interchangeably. Commonly used agents are insoluble oils, polydimethylsiloxanes and other silicones, certain alcohols, stearates and glycols. The additive is used to prevent formation of foam or is added to break a foam already formed (https://en.wikipedia.org/wiki/Defoamer).

can range from mild to extremely severe.		Ascorbic acid is a vitamin found particularly in citrus fruits and green vegetables. It is essential in maintaining healthy connective tissue, and is also thought to act as an antioxidant. Severe deficiency causes scurvy (https://www.google.com/search?ei=7JfCXOuVN8GxggeDm6zwDA&q=what+is+ascorbic+acid&oq=what+is+ascorbic+acid&gs_l=psy-ab.3..0j0i131l2j0j0i131j0l5.1784.4652..4657...0.0..1.320.1806.0j3j4j1.....0....1j2..gws-wiz.....0i71j0i67.aO3EddGDVls) Hydrolyzed casein is a slow digesting, slow absorbing protein. Hydrolyzed casein has undergone an additional filtration and processing process that breaks it down into smaller amino acids (https://www.google.com/search?ei=dZjCXN-6Lu-j_QbWiaigDA&q=what+is+hydrolyzed+casein&oq=what+is+hydrolyzed+casein&gs_l=psy-ab.3..0j0i22i30l3.76421.80159..80357...0.0..0.118.1063.13j1.....0....1j2..gws-wiz.....0i71j0i67j0i131.eTQG0MUPtzs) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Sucrose is a compound which is the chief component of cane or beet sugar (https://www.google.com/search?ei=EpnCXOqKJc3U5gKA4JCYAQ&q=what+is+sucrose&oq=what+is+sucrose&gs_l=psy-ab.3..0i67l5j0j0i131l2j0i67j0.49364.53336..53340...0.0..0.83.1119.15.....0....1j2..gws-wiz.....0i71.uydFF54Hb3g) Sodium Bicarbonate is a soluble white powder used in fire extinguishers and effervescent drinks and as a leavening agent in baking (https://www.google.com/search?ei=b5nCXLGaJpL65gL6zLewDw&q=what+is+sodium+bicarbonate&oq=what+is+sodium+bicarbonate&gs_l=psy-ab.3..0j0i131l2j0j0i131j0l5.1300.5151..5157...0.0..0.87.939.13.....0....1j2..gws-wiz.....0i71j0i22i30.DCHuXWtmtCo) Sodium carbonate is a white alkaline compound with many commercial applications including the manufacture of soap and glass (https://www.google.com/search?ei=0JnCXPDxE8WW5gKMp5bYCA&q=what+is+sodium+carbonate&oq=what+is+s

		odium+carbonate&gs_l=psy-ab.3..0l10.48844.53418..53622...0.0..0.81.1371.19.....0....1j2..gws-wiz.....0i71j0i67j0i131.Agpy62KtDa0)
DT (Sanofi) ***Pertussis	aluminum phosphate, isotonic sodium chloride, formaldehyde, casein, cystine, maltose, uracil, inorganic salts, vitamins, dextrose	Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals (https://www.nj.gov/health/eoh/rtkweb/documents/fs/0062.pdf) Isotonic sodium chloride is an aqueous solution of .9 percent sodium chloride, isotonic with the blood and tissue fluid, used in medicine chiefly for bathing tissue and in sterile form, as a solvent for drugs that are to be administered parenterally to replace blood fluids (https://www.dictionary.com/browse/isotonic-sodium-chloride-solution) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Casein is the main protein present in milk and cheese. It is used in processed foods and in adhesives, paints, and other industrial products (https://www.google.com/search?ei=NJvCXNvCNobl5gK-pqXQDA&q=what+is+casein&oq=what+is+casein&gs_l=psy-ab.3..0i67l10.1091.4595..4603...0.0..1.284.2697.0j5j7.....0....1j2..gws-wiz.....0i71j0.n31jjk7e5BE) Cystine is a compound which is an oxidized dimer of cysteine and is the form in which cysteine often occurs in organic tissue. Cystine is an amino acid that is particularly notable because it is the least soluble of all the naturally occurring amino acids and because it precipitates out of solution in the genetic disease cystinuria to form stones in the urinary tract. Cystine is the chief sulfur-containing compound in protein. Cystine is generated by the union of two cysteine molecules and so is sometimes called dicysteine. It is abbreviated Cys-Cys (https://www.medicinenet.com/script/main/art.asp?articlekey=7733) Maltose is a sugar produced by the breakdown of starch by enzymes found in malt and saliva. It is a disaccharide consisting of two linked glucose units (https://www.google.com/search?ei=5ZvCXLHPH-zA5gL8qqLYDA&q=what+is+maltose&oq=what+is+maltose&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.1232.4804..4808...0.0..0.307.1614.0j3j2j2.....0....1j2..gws-wiz.....0i71j0i10.ts51X8UhnI8)

		Uracil is a compound found in living tissue as a constituent base of RNA. In DNA its place is taken by thymine (https://www.google.com/search?ei=l5zCXPTGCY2KggeZ8biwCA&q=what+is+uracil&oq=what+is+uracil&gs_l=psy-ab.3..0i67l3j0j0i67j0i131l2j0j0i131j0.49127.52208..52213...0.0..0.83.517.7.....0....1j2..gws-wiz.....0i71j0i10.VcQW6S7oDbA) Inorganic salts are an essential nutrition for human and animals. They are mostly in the combination form when in food, and often dissociated into inorganic salt ions in the body fluid. There are also a small amount of inorganic salts in the body fluid combined with protein, especially trace elements (https://www.google.com/search?ei=OZDCXJeQOeSO5wK0_qrYBQ&q=what+are+inorganic+salts&oq=what+are+inorganic+salts&gs_l=psy-ab.3..0i7i30j0j0i7i30l4j0j0i8i30l3.1332.9126..9438...9.0..3.268.3773.6j8j8.....0....1j2..gws-wiz.....0..0i71j0i67j0i131j0i22i30.wcrRAy5mwvI) Dextrose is a prescription sterile, nonpyrogenic solution for fluid replenishment and caloric supply for intravenous and/or oral administration as a treatment of low blood sugar (https://www.rxlist.com/consumer_dextrose/drugs-condition.htm)
DTaP (Daptacel) ***booster of DTaP	aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin, Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium without beef heart infusion	Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals (https://www.nj.gov/health/eoh/rtkweb/documents/fs/0062.pdf) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Glutaraldehyde is a disinfectant, medication, preservative and fixative. As a disinfectant it is used to sterilize surgical instruments and other areas of hospitals. As a medication it is used to treat warts on the bottom of the feet. As a preservative, it is used in some cosmetics (https://en.wikipedia.org/wiki/Glutaraldehyde) Phenoxyethanol is a colorless liquid with a pleasant odor. It is a glycol ether used as a perfume fixative, insect repellent, antiseptic, solvent, preservative, and also as an anesthetic in fish aquaculture. Phenoxyethanol is an ether alcohol with aromatic properties. It is both naturally and found as an effective preservative in pharmaceuticals,

		cosmetics and lubricants. Phenoxyethanol, is the most commonly used globally approved preservative in personal care formulations (https://pubchem.ncbi.nlm.nih.gov/compound/2-phenoxyethanol) Stainer and Scholte's is inactive pertussis Casamino acids is a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media. It has all the essential amino acids except tryptophan which becomes almost destroyed when digested with sulfuric or hydrochloric acid. Casamino acids is similar to tryptone, the latter differing by being an incomplete enzymatic hydrolysis with some obligopeptides present, while casamino acids is predominantly free amino acids (https://en.wikipedia.org/wiki/Casamino_acid) dimethyl-beta-cyclodextrin – could not find reliable information Mueller-Miller Medium compound that contains glucose, sodium chloride, sodium phosphate dibasic, monopotassium, phosphate, magnesium, sulfate hydrate, ferrous sulfate heptahydrate, cystine hydrochloride, tyrosine hydrochloride, uracil hydrochloride, Ca-pantothenate in ethanol, thiamine in ethanol, pyridoxin-hydrochloride in ethanol, riboflavin in ethanol, biotin in ethanol, sodium hydroxide, beef heart infusion (de-fatted beef heart in distilled water), casein solution (https://vaccines.procon.org/view.resource.php?resourceID=005206#mueller_miller) ***Ethanol, also called alcohol, ethyl alcohol and grain alcohol are a clear, colorless liquid and the principle ingredient in alcoholic beverages like beer, wine, or brandy. Because it can readily dissolve in water and other organic compounds, ethanol also is an ingredient in a range of products, from personal care and beauty products to paints and varnishes to fuel (https://www.chemicalsafetyfacts.org/ethanol/) Ammonium sulfate – the primary use of ammonium sulfate is as a fertilizer for alkaline soils. In the soil the ammonium ion is released a form a small amount of acid, lowering the pH balance of the soil, while contributing essential nitrogen for plant growth. The main disadvantage to the use of ammonium sulfate is its low nitrogen content relative to ammonium nitrate, which elevates transportation costs (https://en.wikipedia.org/wiki/Ammonium_sulfate)
DTaP (Infanrix) ***Tetanus enters the	Fenton medium containing a bovine extract, modified Latham medium	Fenton medium – unable to find information. Bovine is related to cattle. Modified Latham medium derives from bovine casein is a compound made of polypeptone (peptone is a mixture of peptone made up of equal parts of pancreatic digest of casein and peptic digest of animal tissue), bovine (cattle) heart

body through a cut or wound.	derived from bovine casein, formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide, sodium chloride, polysorbate 80 (Tween 80)	extract, glucose (a simple sugar), sodium chloride (salt), magnesium sulfate (mineral to control low blood levels of magnesium. Injection is also used for pediatric acute nephritis and to prevent seizures in severe pre-eclampsia, eclampsia, or toxemia of pregnancy), cystine (a compound which is an oxidized dimer of cysteine and is the form in which cysteine often occurs in organic tissue), calcium pantothenate (calcium salt of the water-soluble vitamin B5. Found in plants and animal tissues with antioxidant property), uracil (a compound found in living tissue as a constituent base of RNA. In DNA its place is taken by thymine), nicotinic acid (a vitamin of the B complex which is widely distributed in foods such as milk, wheat germ, and meat and can be synthesized in the body from tryptophan), thiamine (a vitamin of the B complex found in unrefined grains, beans, and liver), riboflavin (a yellow vitamin of the B complex which is essential for metabolic energy production. It is present in many foods, especially milk, liver, eggs, and green vegetables and is also synthesized by the intestinal flora), pyridoxine (a colorless weakly basic solid present chiefly in cereals, liver oils and yeast and important in the metabolism of unsaturated fatty acids), biotin (a vitamin of the B complex found in egg yolk, liver and yeast. It is involved in the synthesis of the fatty acids of glucose), vitamin B12 (any of a group of substances which are essential for the working of certain enzymes in the body and although not chemically related, are generally found together in the same foods. They include thiamine, riboflavin, pyridoxine, and cyanocobalamin), folic acid (a form of folate that everyone needs. Folic acid protects unborn babies against serious birth defects), iron III (inorganic compound. It is one of the three main oxides of iron. Main source of the steel industry. Readily attacked by acids. Often called rust), chloride, iron sulfate. Bovine is derived from cattle. ***information collected from various sources. Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Stainer and Scholte's is inactive pertussis Glutaraldehyde is a disinfectant, medication, preservative and fixative. As a disinfectant it is used to sterilize surgical instruments and other areas of hospitals. As a medication it is used to treat warts on the bottom of the feet. As a preservative, it is used in some cosmetics (https://en.wikipedia.org/wiki/Glutaraldehyde) Aluminum hydroxide is an over the counter product used as an antacid and to treat peptic ulcer disease and hyperphosphatemia (https://www.rxlist.com/consumer_aluminum_hydroxide_alternagel/drugs-condition.htm)

		Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Polysorbate 80 is a nonionic surfactant and emulsifier often used in foods and cosmetics. This synthetic compound is a vicious water-soluble yellow liquid.
DTaP-IPV (Kinrix)	Fenton medium containing a bovine extract, modified Latham medium derived from bovine casein, formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide, VERO cells, a continuous line of monkey kidney cells, Calf serum, lactalbumin hydrolysate, sodium chloride, polysorbate 80 (Tween 80), neomycin sulfate, polymyxin B	Fenton medium – unable to find information. Bovine is related to cattle. Modified Latham medium derives from bovine casein is a compound made of polypeptone (peptone is a mixture of peptone made up of equal parts of pancreatic digest of casein and peptic digest of animal tissue), bovine (cattle) heart extract, glucose (a simple sugar), sodium chloride (salt), magnesium sulfate (mineral to control low blood levels of magnesium. Injection is also used for pediatric acute nephritis and to prevent seizures in severe pre-eclampsia, eclampsia, or toxemia of pregnancy), cystine (a compound which is an oxidized dimer of cysteine and is the form in which cysteine often occurs in organic tissue), calcium pantothenate (calcium salt of the water-soluble vitamin B5. Found in plants and animal tissues with antioxidant property), uracil (a compound found in living tissue as a constituent base of RNA. In DNA its place is taken by thymine), nicotinic acid (a vitamin of the B complex which is widely distributed in foods such as milk, wheat germ, and meat and can be synthesized in the body from tryptophan), thiamine (a vitamin of the B complex found in unrefined grains, beans, and liver), riboflavin (a yellow vitamin of the B complex which is essential for metabolic energy production. It is present in many foods, especially milk, liver, eggs, and green vegetables and is also synthesized by the intestinal flora), pyridoxine (a colorless weakly basic solid present chiefly in cereals, liver oils and yeast and important in the metabolism of unsaturated fatty acids), biotin (a vitamin of the B complex found in egg yolk, liver and yeast. It is involved in the synthesis of the fatty acids of glucose), vitamin B12 (any of a group of substances which are essential for the working of certain enzymes in the body and although not chemically related, are generally found together in the same foods. They include thiamine, riboflavin, pyridoxine, and cyanocobalamin), folic acid (a form of folate that everyone needs. Folic acid protects unborn babies against serious birth defects), iron III (inorganic compound. It is one of the three main oxides of iron. Main source of the steel industry. Readily attacked by acids. Often called rust), chloride, iron sulfate. Bovine is derived from cattle. ***information collected from various sources.

		Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Stainer and Scholte's is inactive pertussis Glutaraldehyde is a disinfectant, medication, preservative and fixative. As a disinfectant it is used to sterilize surgical instruments and other areas of hospitals. As a medication it is used to treat warts on the bottom of the feet. As a preservative, it is used in some cosmetics (https://en.wikipedia.org/wiki/Glutaraldehyde) Aluminum hydroxide is an over the counter product used as an antacid and to treat peptic ulcer disease and hyperphosphatemia (https://www.rxlist.com/consumer_aluminum_hydroxide_alternagel/drugs-condition.htm) VERO cells are a lineage of cells used in cell cultures. The Vero linage was isolated from kidney epithelial cells extracted from an African green monkey. The lineage was developed on March 27, 1962 by Yasumura and Kawakita at the Chiba University in Chiba, Japan. The original cell was named Vero after an abbreviation of verda reno which means green kidney in Esperanto, which vero itself means "truth" in Esperanto (https://en.wikipedia.org/wiki/Vero_cell) Calf serum aka Fetal bovine serum comes from the blood drawn from a bovine fetus via a closed system of collection at the slaughterhouse. Fetal bovine serum is the most widely used serum supplement for the in vitro cell culture of eukaryotic cells. This is due to it having a very low level of antibodies and containing more growth factors, allowing for versatility in many different cell culture applications (https://en.wikipedia.org/wiki/Fetal_bovine_serum) Lacktalbumin Hydrolysate is the enzymatically hydrolyzed protein portion of milk whey, which is recognized as a complete protein source. This product is a mixture of peptides, amino acids and carbohydrates, both simple and complex (https://www.google.com/search?ei=U2PEXKe-MK-r5wL4rrTwCA&q=what+is+lactalbumin+hydrolysate&oq=what+is+lactalbumin+hydrolysate&gs_l=psy-ab.3..0i67j0j0i131l3j0l5.584.4131..4136...0.0..0.309.2264.0j3j6j1.....0....1j2..gws-wiz.....0i71.PBxySVoC10c)

		Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Polysorbate 80 is a nonionic surfactant and emulsifier often used in foods and cosmetics. This synthetic compound is a viscous water-soluble yellow liquid (https://en.wikipedia.org/wiki/Polysorbate_80) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Polymyxin B is a medication used to treat bacterial infections (such as blepharitis, conjunctivitis) of the eye. It contains 2 antibiotics. Polymyxin B works by killing the bacteria (https://www.google.com/search?ei=UGTEXO3IF42u5wK65ZfABQ&q=what+is+polymyxin+B&oq=what+is+polymyxin+B&gs_l=psy-ab.3..0j0i7i30l3j0j0i7i30j0l2j0i30l2.59961.65801..66102...0.0..0.128.1418.16j2.....0....1j2..gws-wiz.....0i71j0i67j0i22i30j0i131.MP0ZEk17_CY)
DTaP-IPV (Quadracel)	modified Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium without beef heart infusion, formaldehyde, aluminum phosphate, StainerScholte medium, casamino acids, dimethyl-beta-	Mueller-Miller Medium compound that contains glucose, sodium chloride, sodium phosphate dibasic, monopotassium, phosphate, magnesium, sulfate hydrate, ferrous sulfate heptahydrate, cystine hydrochloride, tyrosine hydrochloride, uracil hydrochloride, Ca-pantothenate in ethanol, thiamine in ethanol, pyridoxin-hydrochloride in ethanol, riboflavin in ethanol, biotin in ethanol, sodium hydroxide, beef heart infusion (de-fatted beef heart in distilled water), casein solution (https://vaccines.procon.org/view.resource.php?resourceID=005206#mueller_miller) ***Ethanol, also called alcohol, ethyl alcohol and grain alcohol are a clear, colorless liquid and the principle ingredient in alcoholic beverages like beer, wine, or brandy. Because it can readily dissolve in water and other organic compounds, ethanol also is an ingredient in a range of products, from personal care and beauty products to paints and varnishes to fuel (https://www.chemicalsafetyfacts.org/ethanol/) Ammonium sulfate – the primary use of ammonium sulfate is as a fertilizer for alkaline soils. In the soil the ammonium ion is released a form a small amount of acid, lowering the pH balance of the soil, while contributing

	cyclodextrin, MRC-5 cells, normal human diploid cells, CMRL 1969 medium supplemented with calf serum, Medium 199 without calf serum, 2-phenoxyethanol, polysorbate 80, glutaraldehyde, neomycin, polymyxin B sulfate	essential nitrogen for plant growth. The main disadvantage to the use of ammonium sulfate is its low nitrogen content relative to ammonium nitrate, which elevates transportation costs (https://en.wikipedia.org/wiki/Ammonium_sulfate) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals (https://www.nj.gov/health/eoh/rtkweb/documents/fs/0062.pdf) Stainer and Scholte's is inactive pertussis Casamino acids is a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media. It has all the essential amino acids except tryptophan which becomes almost destroyed when digested with sulfuric or hydrochloric acid. Casamino acids is similar to tryptone, the latter differing by being an incomplete enzymatic hydrolysis with some obligopeptides present, while casamino acids is predominantly free amino acids (https://en.wikipedia.org/wiki/Casamino_acid) dimethyl-beta-cyclodextrin – could not find reliable information MRC-5 (Medical Research Council cell strain 5) is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted Caucasian male fetus (https://en.wikipedia.org/wiki/MRC-5) Normal diploid human cell is a WI-38 cell strain composed of fibroblasts derived from lung tissue of a 3-months gestation aborted female fetus (https://en.wikipedia.org/wiki/WI-38) CMRL 1969 medium (supplemented with calf serum) is an improved tissue culture basal medium supplemented with calf serum. Like all culture media, it is designed to support the growth of microorganisms or cells, for use in vaccine production (http://vaxeducation.com/vaccine-ingredients-2/cmrl-1969-medium-supplemented-with-calf-serum/)

		2-phenoxyethanol is an aromatic ether that is phenol substituted on oxygen by a 2-hydroxythyl group. It has a role as an anti-infective agency and a central nervous system depressant. It is a hydroxyether, a primary alcohol and an aromatic ether. It derives from a phenol. It's a preservative (https://pubchem.ncbi.nlm.nih.gov/compound/2-phenoxyethanol) Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80) Glutaraldehyde is a disinfectant, medication, preservative and fixative. As a disinfectant it is used to sterilize surgical instruments and other areas of hospitals. As a medication it is used to treat warts on the bottom of the feet. As a preservative, it is used in some cosmetics (https://en.wikipedia.org/wiki/Glutaraldehyde) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Polymyxin B is a medication used to treat bacterial infections (such as blepharitis, conjunctivitis) of the eye. It contains 2 antibiotics. Polymyxin B works by killing the bacteria (https://www.google.com/search?ei=UGTEXO3IF42u5wK65ZfABQ&q=what+is+polymyxin+B&oq=what+is+polymyxin+B&gs_l=psy-ab.3..0j0i7i30l3j0j0i7i30j0l2j0i30l2.59961.65801..66102...0.0..0.128.1418.16j2.....0....1j2..gws-wiz.....0i71j0i67j0i22i30j0i131.MP0ZEk17_CY)
DTaP-HepB-IPV (Pediarix)	Fenton medium containing a bovine extract, modified Latham medium derived from bovine casein, formaldehyde, glutaraldehyde,	Fenton medium – unable to find information. Bovine is related to cattle. Modified Latham medium derives from bovine casein is a compound made of polypeptone (peptone is a mixture of peptone made up of equal parts of pancreatic digest of casein and peptic digest of animal tissue), bovine (cattle) heart extract, glucose (a simple sugar), sodium chloride (salt), magnesium sulfate (mineral to control low blood levels of magnesium. Injection is also used for pediatric acute nephritis and to prevent seizures in severe pre-eclampsia, eclampsia, or toxemia of pregnancy), cystine (a compound which is an oxidized dimer of cysteine and is the form in which cysteine often occurs in organic tissue), calcium pantothenate (calcium salt of the water-soluble vitamin B5.

	modified Stainer-Scholte liquid medium, VERO cells, a continuous line of monkey kidney cells, calf serum and lactalbumin hydrolysate, aluminum hydroxide, aluminum phosphate, aluminum salts, sodium chloride, polysorbate 80 (Tween 80), neomycin sulfate, polymyxin B, yeast protein.	Found in plants and animal tissues with antioxidant property), uracil (a compound found in living tissue as a constituent base of RNA. In DNA its place is taken by thymine), nicotinic acid (a vitamin of the B complex which is widely distributed in foods such as milk, wheat germ, and meat and can be synthesized in the body from tryptophan), thiamine (a vitamin of the B complex found in unrefined grains, beans, and liver), riboflavin (a yellow vitamin of the B complex which is essential for metabolic energy production. It is present in many foods, especially milk, liver, eggs, and green vegetables and is also synthesized by the intestinal flora), pyridoxine (a colorless weakly basic solid present chiefly in cereals, liver oils and yeast and important in the metabolism of unsaturated fatty acids), biotin (a vitamin of the B complex found in egg yolk, liver and yeast. It is involved in the synthesis of the fatty acids of glucose), vitamin B12 (any of a group of substances which are essential for the working of certain enzymes in the body and although not chemically related, are generally found together in the same foods. They include thiamine, riboflavin, pyridoxine, and cyanocobalamin), folic acid (a form of folate that everyone needs. Folic acid protects unborn babies against serious birth defects), iron III (inorganic compound. It is one of the three main oxides of iron. Main source of the steel industry. Readily attacked by acids. Often called rust), chloride, iron sulfate. Bovine is derived from cattle. ***information collected from various sources. Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Glutaraldehyde is a disinfectant, medication, preservative and fixative. As a disinfectant it is used to sterilize surgical instruments and other areas of hospitals. As a medication it is used to treat warts on the bottom of the feet. As a preservative, it is used in some cosmetics (https://en.wikipedia.org/wiki/Glutaraldehyde) Stainer and Scholte's is inactive pertussis VERO cells are a lineage of cells used in cell cultures. The Vero linage was isolated from kidney epithelial cells extracted from an African green monkey. The lineage was developed on March 27, 1962 by Yasumura and Kawakita at the Chiba University in Chiba, Japan. The original cell was named Vero after an abbreviation of verda reno which means green kidney in Esperanto, which vero itself means "truth" in Esperanto (https://en.wikipedia.org/wiki/Vero_cell)

		Calf serum aka Fetal bovine serum comes from the blood drawn from a bovine fetus via a closed system of collection at the slaughterhouse. Fetal bovine serum is the most widely used serum supplement for the in vitro cell culture of eukaryotic cells. This is due to it having a very low level of antibodies and containing more growth factors, allowing for versatility in many different cell culture applications (https://en.wikipedia.org/wiki/Fetal_bovine_serum) Aluminum hydroxide is an over the counter product used as an antacid and to treat peptic ulcer disease and hyperphosphatemia (https://www.rxlist.com/consumer_aluminum_hydroxide_alternagel/drugs-condition.htm) Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals (https://www.nj.gov/health/eoh/rtkweb/documents/fs/0062.pdf) Aluminum salts in vaccines is the form of aluminum hydroxide, aluminum phosphate or alum has been commonly used as an adjuvant in many vaccines licensed by the US Food and Drug Administration (https://www.sciencedirect.com/topics/medicine-and-dentistry/aluminum-salt) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI)

		Polymyxin B is a medication used to treat bacterial infections (such as blepharitis, conjunctivitis) of the eye. It contains 2 antibiotics. Polymyxin B works by killing the bacteria (https://www.google.com/search?ei=UGTEXO3IF42u5wK65ZfABQ&q=what+is+polymyxin+B&oq=what+is+polymyxin+B&gs_l=psy-ab.3..0j0i7i30l3j0j0i7i30j0l2j0i30l2.59961.65801..66102...0.0..0.128.1418.16j2.....0....1j2..gws-wiz.....0i71j0i67j0i22i30j0i131.MP0ZEk17_CY) Yeast protein – unable to find accurate information
DTaP-IPV/Hib (Pentacel)	aluminum phosphate, polysorbate 80, sucrose, formaldehyde, glutaraldehyde, bovine serum albumin, 2-phenoxyethanol, neomycin, polymyxin B sulfate, modified Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium without beef heart infusion, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin. MRC-5 cells (a line of normal human diploid cells), CMRL 1969 medium	Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals (https://www.nj.gov/health/eoh/rtkweb/documents/fs/0062.pdf) Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80) Sucrose is a compound which is the chief component of cane or beet sugar. Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Glutaraldehyde is a disinfectant, medication, preservative and fixative. As a disinfectant it is used to sterilize surgical instruments and other areas of hospitals. As a medication it is used to treat warts on the bottom of the feet. As a preservative, it is used in some cosmetics (https://en.wikipedia.org/wiki/Glutaraldehyde) Bovine serum albumin is a serum albumin protein derived from cows. It is often used a protein concentration standard in lab experiments (https://en.wikipedia.org/wiki/Bovine_serum_albumin)

	supplemented with calf serum, Medium 199 without calf serum, modified Mueller and Miller medium	2-phenoxyethanol is an aromatic ether that is phenol substituted on oxygen by a 2-hydroxythyl group. It has a role as an anti-infective agency and a central nervous system depressant. It is a hydroxyether, a primary alcohol and an aromatic ether. It derives from a phenol. It's a preservative (https://pubchem.ncbi.nlm.nih.gov/compound/2-phenoxyethanol) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Polymyxin B is a medication used to treat bacterial infections (such as blepharitis, conjunctivitis) of the eye. It contains 2 antibiotics. Polymyxin B works by killing the bacteria (https://www.google.com/search?ei=UGTEXO3IF42u5wK65ZfABQ&q=what+is+polymyxin+B&oq=what+is+polymyxin+B&gs_l=psy-ab.3..0j0i7i30l3j0j0i7i30j0l2j0i30l2.59961.65801..66102...0.0..0.128.1418.16j2.....0....1j2..gws-wiz.....0i71j0i67j0i22i30j0i131.MP0ZEk17_CY) Mueller-Miller Medium compound that contains glucose, sodium chloride, sodium phosphate dibasic, monopotassium, phosphate, magnesium, sulfate hydrate, ferrous sulfate heptahydrate, cystine hydrochloride, tyrosine hydrochloride, uracil hydrochloride, Ca-pantothenate in ethanol, thiamine in ethanol, pyridoxin-hydrochloride in ethanol, riboflavin in ethanol, biotin in ethanol, sodium hydroxide, beef heart infusion (de-fatted beef heart in distilled water), casein solution (https://vaccines.procon.org/view.resource.php?resourceID=005206#mueller_miller) ***Ethanol, also called alcohol, ethyl alcohol and grain alcohol are a clear, colorless liquid and the principle ingredient in alcoholic beverages like beer, wine, or brandy. Because it can readily dissolve in water and other organic compounds, ethanol also is an ingredient in a range of products, from personal care and beauty products to paints and varnishes to fuel (https://www.chemicalsafetyfacts.org/ethanol/) Ammonium sulfate – the primary use of ammonium sulfate is as a fertilizer for alkaline soils. In the soil the ammonium ion is released a form a small amount of acid, lowering the pH balance of the soil, while contributing essential nitrogen for plant growth. The main disadvantage to the use of ammonium sulfate is its low nitrogen content relative to ammonium nitrate, which elevates transportation costs (https://en.wikipedia.org/wiki/Ammonium_sulfate) Stainer and Scholte's is inactive pertussis

		Casamino acids is a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media. It has all the essential amino acids except tryptophan which becomes almost destroyed when digested with sulfuric or hydrochloric acid. Casamino acids is similar to tryptone, the latter differing by being an incomplete enzymatic hydrolysis with some obligopeptides present, while casamino acids is predominantly free amino acids (https://en.wikipedia.org/wiki/Casamino_acid) dimethyl-beta-cyclodextrin – could not find reliable information MRC-5 (Medical Research Council cell strain 5) is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted Caucasian male fetus (https://en.wikipedia.org/wiki/MRC-5) CMRL 1969 medium (supplemented with calf serum) is an improved tissue culture basal medium supplemented with calf serum. Like all culture media, it is designed to support the growth of microorganisms or cells, for use in vaccine production (http://vaxeducation.com/vaccine-ingredients-2/cmrl-1969-medium-supplemented-with-calf-serum/)
Hib (ActHIB)	sodium chloride, modified Mueller and Miller medium (the culture medium contains milk derived raw materials [casein derivatives]), formaldehyde, sucrose	Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Mueller-Miller Medium compound that contains glucose, sodium chloride, sodium phosphate dibasic, monopotassium, phosphate, magnesium, sulfate hydrate, ferrous sulfate heptahydrate, cystine hydrochloride, tyrosine hydrochloride, uracil hydrochloride, Ca-pantothenate in ethanol, thiamine in ethanol, pyridoxin-hydrochloride in ethanol, riboflavin in ethanol, biotin in ethanol, sodium hydroxide, beef heart infusion (de-fatted beef heart in distilled water), casein solution (https://vaccines.procon.org/view.resource.php?resourceID=005206#mueller_miller) ***Ethanol, also called alcohol, ethyl alcohol and grain alcohol are a clear, colorless liquid and the principle ingredient in alcoholic beverages like beer, wine, or brandy. Because it can readily dissolve in water and other organic compounds, ethanol also is an ingredient in a range of products, from personal care and beauty products to paints and varnishes to fuel (https://www.chemicalsafetyfacts.org/ethanol/) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide

		range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Sucrose is a compound which is the chief component of cane or beet sugar.
Hib (Hiberix)	saline, synthetic medium, formaldehyde, sodium chloride, lactose	Saline is a solution of salt in water (https://www.google.com/search?ei=vmrEXMXjHbLy5gLK8LSQDw&q=what+is+saline&oq=what+is+saline&gs_l=psy-ab.3..0l10.1267995.1269972..1270116...0.0..0.108.868.10j1.....0....1..gws-wiz.....0i71j0i67j0i10j0i131.ZeTY-OngbgI) Synthetic medium is a culture medium consisting only of known mixtures of chemical compounds such as sugar and salt (https://www.merriam-webster.com/dictionary/synthetic%20medium) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Lactose is a sugar present in milk. It is a disaccharide containing glucose and galactose units (https://www.google.com/search?ei=tW_EXIPVIIzs5gKV7JjAAg&q=what+is+lactose&oq=what+is+lactose&gs_l=psy-ab.3..0l10.705.2663..2811...0.0..0.90.904.13.....0....1..gws-wiz.....0i71j0i67j0i131j0i3.F_3XdaqPlL0)
Hib (PedvaxHIB)	complex fermentation media, amorphous aluminum hydroxy	Complex fermentation media – in a fermentation process, the choice of the most optimum micro-organisms and fermentation media is very important for high yield of product. The quality of fermentation media is important as it provides nutrients and energy for growth of micro-organisms. This medium provides substrate for product synthesis in a fermenter (https://www.generalmicroscience.com/industrial-microbiology/fermentation-media-design/)

	phosphate sulfate, sodium chloride	Amorphous aluminum hydroxy phosphate sulfate is one of a half a dozen distinct forms of aluminum adjuvants present in vaccines, including the PedvaxHIB, Vaqta, HepA, and Gardasil Human Papillomavirus (HPV). Studies have found 100% of the intramuscularly injected aluminum vaccine adjuvant is absorbed into the systemic circulation and travels to different sites in the body such as the brain, joints, and the spleen where it accumulates and is retained for years post-vaccination. A 2017 peer-reviewed report found evidence of numerous adverse events reported after vaccination with Merck's Gardasil vaccines, including life-threatening injuries, permanent disabilities, hospitalizations and deaths (https://childrenshealthdefense.org/aluminum/amorphous-aluminum-hydroxyphosphate-sulfate-aahs/) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg)
Hep A (Havrix)	MRC-5 human diploid cells, formalin, aluminum hydroxide, amino acid supplement, phosphate-buffered saline solution, polysorbate 20, neomycin sulfate, aminoglycoside antibiotic	MRC-5 (Medical Research Council cell strain 5) is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted Caucasian male fetus (https://en.wikipedia.org/wiki/MRC-5) Aluminum hydroxide is an over the counter product used as an antacid and to treat peptic ulcer disease and hyperphosphatemia (https://www.rxlist.com/consumer_aluminum_hydroxide_alternagel/drugs-condition.htm) Amino acid supplement is the branched chain amino acids are a group of three essential amino acids; leucine, isoleucine and valine. They are essential, meaning they can't be produced by your body and must be obtained from food. BCAA supplements have been shown to build muscle, decrease muscle fatigue and alleviate muscle soreness (https://www.google.com/search?ei=EMDEXMG6N-Gm_Qbf9YnADA&q=what+is+amino+acid+supplement&oq=what+is+amino+acid+supplement&gs_l=psy-ab.3..0j0i22i30l7j0i22i10i30j0i22i30.2968.5518..6016...0.0..0.300.388.1j3-1.....0....1j2..gws-wiz.....0i71j0i67.O3x-o4MnceI) Phosphate – buffered saline solution is a buffer solution commonly used in biological research. It is a water based salt solution containing disodium hydrogen phosphate, sodium chloride and in some formulations, potassium chloride and potassium dihydrogen phosphate (https://www.google.com/search?ei=eMHEXJzVEI-1ggfoxovwCQ&q=what+is+phosphate-buffered+saline+solution&oq=what+is+phosphate-buffered+saline+solution&gs_l=psy-ab.3..0i67j0j0i131l3j0l5.390769.396091..396216...0.0..0.187.1732.20j1.....0....1j2..gws-wiz.....0i71j0i22i30.vD-dHGP72Ow)

		Polysorbate 20 is used in cosmetics and skin care products as a surfactant, emulsifier and fragrance ingredient. It is derived from Lauric Acid and is also a chemical mixture of sorbitol ethylene oxide, according to Wikipedia. It is sometimes derived from fruits and berries as well, leading to its fragrant properties. Polysorbate 20 can serve as a dispersing agent and mix oil and water, work as a fragrance solubilizer and stabilizer, act as a lubricator, and have a soothing effect on the skin (https://www.truthinaging.com/ingredients/polysorbate-20) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Aminoglycoside is a medicinal and bacteriologic category of traditional Gram-negative antibacterial medications that inhibit protein synthesis and contain as a portion of the molecule an amino modified glycoside (sugar). The term can also refer more generally to any organic molecule that contains amino sugar substructures. Aminoglycoside antibiotics display bactericidal activity against Gram-negative aerobes and some anaerobic bacilli where resistance has not yet arisen but generally not against Gram-positive and anaerobic Gram-negative bacteria (https://en.wikipedia.org/wiki/Aminoglycoside)
Hep A (Vaqta)	MRC-5 diploid fibroblasts, amorphous aluminum hydroxy phosphate sulfate, non-viral protein, DNA, bovine albumin, formaldehyde, neomycin, sodium borate, sodium chloride	MRC-5 (Medical Research Council cell strain 5) is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted Caucasian male fetus (https://en.wikipedia.org/wiki/MRC-5) Amorphous aluminum hydroxy phosphate sulfate is one of a half a dozen distinct forms of aluminum adjuvants present in vaccines, including the PedvaxHIB, Vaqta, HepA, and Gardasil Human Papillomavirus (HPV). Studies have found 100% of the intramuscularly injected aluminum vaccine adjuvant is absorbed into the systemic circulation and travels to different sites in the body such as the brain, joints, and the spleen where it accumulates and is retained for years post-vaccination. A 2017 peer-reviewed report found evidence of numerous adverse events reported after vaccination with Merck's Gardasil vaccines, including life-threatening injuries, permanent disabilities, hospitalizations and deaths (https://childrenshealthdefense.org/aluminum/amorphous-aluminum-hydroxyphosphate-sulfate-aahs/)

		Non-viral protein aka non-viral vectors are DNA plasmids that can be delivered to the target cells as naked DNA or in association with different compounds such as liposomes, gelatin or polyamine nanospheres (https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/non-viral-vector) DNA derived from human cells Bovine serum albumin is a serum albumin protein derived from cows. It is often used a protein concentration standard in lab experiments (https://en.wikipedia.org/wiki/Bovine_serum_albumin) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Sodium Borate is a toxic white, powdery mineral used in cleaning, laundry, personal care products and even children's toys as a buffering pH adjuster. Borax is found as an ingredient in all-purpose cleaners, toilet bowl cleaners, laundry detergent laundry stain removers, air fresheners, dish detergents, glass cleaners, diaper creams, pesticides and herbicides as well as and some slimy pliable toys like playdough, gak, or silly putty (https://www.forceofnatureclean.com/chemical-free-living-sodium-borate/) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg)
Hep B (Engerix-B)	aluminum hydroxide, yeast protein, sodium	Aluminum hydroxide is an over the counter product used as an antacid and to treat peptic ulcer disease and hyperphosphatemia (https://www.rxlist.com/consumer_aluminum_hydroxide_alternagel/drugs-condition.htm)

	chloride, disodium phosphate dihydrate, sodium dihydrogen phosphate dihydrate	Yeast protein – unable to find accurate information Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Disodium Phosphate Dihydrate is used in conjunction with trisodium phosphate in foods and water softening treatment. In foods, it is used to adjust pH. Its presence prevents coagulation in the preparation of condensed milk. Similarly, it is used as an anti-caking additive in powdered products. It is used in desserts and puddings. It is also found in some detergents and cleaning agents (https://en.wikipedia.org/wiki/Disodium_phosphate) Sodium Dihydrogen phosphate is a white crystalline powder. It is used as a pH buffer, in baking powders; in boiler water treatment; and as a dry acidulant and sequestrant for foods (https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+738)
Hep B (Recombivax)	soy peptone, dextrose, amino acids, mineral salts, phosphate buffer, formaldehyde, potassium aluminum sulfate, amorphous aluminum hydroxy phosphate sulfate, yeast protein	Soy peptone is the soluble end product of the enzymic digestion of soybean meal. Because of the stimulatory properties associated with soy peptone, it is ideally recommended as a growth stimulant for the cultivation of fastidious microorganisms (http://himedialabs.com/TD/RM007.pdf) Dextrose is a prescription sterile, nonpyrogenic solution for fluid replenishment and caloric supply for intravenous and/or oral administration as a treatment of low blood sugar (https://www.rxlist.com/consumer_dextrose/drugs-condition.htm) Amino acid supplement is the branched chain amino acids are a group of three essential amino acids; leucine, isoleucine and valine. They are essential, meaning they can't be produced by your body and must be obtained from food. BCAA supplements have been shown to build muscle, decrease muscle fatigue and alleviate muscle soreness (https://www.google.com/search?ei=EMDEXMG6N-Gm_Qbf9YnADA&q=what+is+amino+acid+supplement&oq=what+is+amino+acid+supplement&gs_l=psy-ab.3..0j0i22i30l7j0i22i10i30j0i22i30.2968.5518..6016...0.0..0.300.388.1j3-1.....0....1j2..gws-wiz.....0i71j0i67.O3x-o4MnceI)

		Mineral salts are inorganic salts that need to be ingested or absorbed by living organisms for healthy growth and maintenance. They comprise the salts of the trace elements in animals and the micronutrients of plants (https://www.encyclopedia.com/science/dictionaries-thesauruses-pictures-and-press-releases/mineral-salts) Phosphate-buffered saline is a buffer solution commonly used in biological research. It is a water-based salt solution containing disodium hydrogen phosphate, sodium chloride and in some formulations, potassium chloride and potassium dihydrogen phosphate. The buffer helps to maintain a constant pH. The osmolarity and ion concentrations of the solutions match those of the human body (https://en.wikipedia.org/wiki/Phosphate-buffered_saline) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Potassium aluminum sulfate is a chemical compound: the double sulfate of potassium and aluminum. It is commonly encountered as the dodecahydrate. It crystallizes in cubic structure with space group and lattice parameter. The compound is the most important member of the generic class of compounds called alums and is often called simply alum. Potassium alum is commonly used in water purification, leather tanning, dyeing, fireproof textiles and baking powder (https://en.wikipedia.org/wiki/Potassium_alum) Amorphous aluminum hydroxy phosphate sulfate is one of a half a dozen distinct forms of aluminum adjuvants present in vaccines, including the PedvaxHIB, Vaqta, HepA, and Gardasil Human Papillomavirus (HPV). Studies have found 100% of the intramuscularly injected aluminum vaccine adjuvant is absorbed into the systemic circulation and travels to different sites in the body such as the brain, joints, and the spleen where it accumulates and is retained for years post-vaccination. A 2017 peer-reviewed report found evidence of numerous adverse events reported after vaccination with Merck's Gardasil vaccines, including life-threatening injuries, permanent disabilities, hospitalizations and deaths (https://childrenshealthdefense.org/aluminum/amorphous-aluminum-hydroxyphosphate-sulfate-aahs/) Yeast protein – unable to find accurate information
Hep B (Heplisav-B)	vitamins and mineral salts, yeast protein, yeast DNA,	Vitamins and mineral salts – could not find reliable information Yeast protein – unable to find accurate information

	deoxycholate, phosphonothioate linked oligodeoxynucleotide, phosphate buffered saline, sodium phosphate, dibasic dodecahydrate, monobasic dehydrate, polysorbate 80	Yeast DNA – DNA derived from yeast Deoxycholic acid is a bile acid which emulsifies and solubilizes dietary fats in the intestine, and when injected subcutaneously, it disrupts cell membranes in adipocytes and destroys fat cells in that tissue (https://pubchem.ncbi.nlm.nih.gov/compound/deoxycholic_acid) Phosphonothioates are competitive inhibitors of DNA polymerase a and b with respect to the DNA template and noncompetitive inhibitors of DNA polymers y and o (https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/phosphorothioates) Phosphate-buffered saline is a buffer solution commonly used in biological research. It is a water-based salt solution containing disodium hydrogen phosphate, sodium chloride and in some formulations, potassium chloride and potassium dihydrogen phosphate. The buffer helps to maintain a constant pH. The osmolarity and ion concentrations of the solutions match those of the human body (https://en.wikipedia.org/wiki/Phosphate-buffered_saline) Sodium phosphate is a generic term for a variety of salts of sodium and phosphate. Phosphate also forms families or condensed anions including di, tri, tetra, and polyphosphates. Most of these salts are known in both anhydrous (water-free) and hydrated forms. The hydrated forms are more common than the anhydrous forms (https://en.wikipedia.org/wiki/Sodium_phosphates) Disodium phosphate or sodium hydrogen phosphate or sodium phosphate dibasic, is the inorganic compound. It is one of several sodium phosphates. The salt is known in anhydrous form as well as forms with 2, 7, 8, 12 hydrates. All are water-soluble white powders; the anhydrous salt being hygroscopic. It is used in conjunction with trisodium phosphate in foods and water softening treatment. In foods, it is used to adjust pH. Its presence prevents coagulation in the preparation of condensed milk. Similarly, it is used as an anti-caking additive in powdered products. It is used in desserts and puddings. In water treatment, it retards calcium scale formation. It is also found in some detergents and cleanings agents (https://en.wikipedia.org/wiki/Disodium_phosphate) Monobasic sodium phosphate and sodium dihydrogen phosphate is an inorganic compound of sodium with a dihydrogen phosphate anion. One of many sodium phosphates, it is a common industrial chemical. It is added to animal feed, toothpaste, and evaporated milk. It is used as a thickening agent and emulsifier (https://en.wikipedia.org/wiki/Monosodium_phosphate)

		Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80)
Hep A/Hep B (Twinrix)	MRC-5 human diploid cells, formalin, aluminum phosphate, aluminum hydroxide, amino acids, sodium chloride, phosphate buffer, polysorbate 20, neomycin sulfate, yeast protein	MRC-5 (Medical Research Council cell strain 5) is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted Caucasian male fetus (https://en.wikipedia.org/wiki/MRC-5) Formalin is a colorless solution of formaldehyde in water, used chiefly as a preservative for biological specimens (https://www.google.com/search?ei=qdvEXMfrNoat5wLM6bfQAg&q=what+is+formalin&oq=what+is+formalin&gs_l=psy-ab.3..0j0i131l3j0l6.1454.5893..5928...0.0..0.307.3681.3j5j8j3.....0....1j2..gws-wiz.....0i71j33i299.HtXyZOYH9no) Aluminum Phosphate is an odorless, white crystalline solid which is often used in liquid or gel form. It is used in ceramics, dental cements, cosmetics, paints, paper and pharmaceuticals (https://www.nj.gov/health/eoh/rtkweb/documents/fs/0062.pdf) Aluminum hydroxide is an over the counter product used as an antacid and to treat peptic ulcer disease and hyperphosphatemia (https://www.rxlist.com/consumer_aluminum_hydroxide_alternagel/drugs-condition.htm) Amino acid supplement is the branched chain amino acids are a group of three essential amino acids; leucine, isoleucine and valine. They are essential, meaning they can't be produced by your body and must be obtained from food. BCAA supplements have been shown to build muscle, decrease muscle fatigue and alleviate muscle soreness (https://www.google.com/search?ei=EMDEXMG6N-Gm_Qbf9YnADA&q=what+is+amino+acid+supplement&oq=what+is+amino+acid+supplement&gs_l=psy-ab.3..0j0i22i30l7j0i22i10i30j0i22i30.2968.5518..6016...0.0..0.300.388.1j3-1.....0....1j2..gws-wiz.....0i71j0i67.O3x-o4MnceI) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg)

		Phosphate-buffered saline is a buffer solution commonly used in biological research. It is a water-based salt solution containing disodium hydrogen phosphate, sodium chloride and in some formulations, potassium chloride and potassium dihydrogen phosphate. The buffer helps to maintain a constant pH. The osmolarity and ion concentrations of the solutions match those of the human body (https://en.wikipedia.org/wiki/Phosphate-buffered_saline) Polysorbate 20 is used in cosmetics and skin care products as a surfactant, emulsifier and fragrance ingredient. It is derived from Lauric Acid and is also a chemical mixture of sorbitol ethylene oxide, according to Wikipedia. It is sometimes derived from fruits and berries as well, leading to its fragrant properties. Polysorbate 20 can serve as a dispersing agent and mix oil and water, work as a fragrance solubilizer and stabilizer, act as a lubricator, and have a soothing effect on the skin (https://www.truthinaging.com/ingredients/polysorbate-20) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Yeast protein – unable to find accurate information
Human Papillomavirus (HPV) (Gardasil 9)	vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxy phosphate sulfate, sodium chloride, L-histidine, polysorbate 80, sodium borate, yeast protein	Vitamins – not enough information Amino acid supplement is the branched chain amino acids are a group of three essential amino acids; leucine, isoleucine and valine. They are essential, meaning they can't be produced by your body and must be obtained from food. BCAA supplements have been shown to build muscle, decrease muscle fatigue and alleviate muscle soreness (https://www.google.com/search?ei=EMDEXMG6N-Gm_Qbf9YnADA&q=what+is+amino+acid+supplement&oq=what+is+amino+acid+supplement&gs_l=psy-ab.3..0j0i22i30l7j0i22i10i30j0i22i30.2968.5518..6016...0.0..0.300.388.1j3-1.....0....1j2..gws-wiz.....0i71j0i67.O3x-o4MnceI) Mineral salts are inorganic salts that need to be ingested or absorbed by living organisms for healthy growth and maintenance. They comprise the salts of the trace elements in animals and the micronutrients of plants (https://www.encyclopedia.com/science/dictionaries-thesauruses-pictures-and-press-releases/mineral-salts)

		Carbohydrates – not enough information Amorphous aluminum hydroxy phosphate sulfate is one of a half a dozen distinct forms of aluminum adjuvants present in vaccines, including the PedvaxHIB, Vaqta, HepA, and Gardasil Human Papillomavirus (HPV). Studies have found 100% of the intramuscularly injected aluminum vaccine adjuvant is absorbed into the systemic circulation and travels to different sites in the body such as the brain, joints, and the spleen where it accumulates and is retained for years post-vaccination. A 2017 peer-reviewed report found evidence of numerous adverse events reported after vaccination with Merck's Gardasil vaccines, including life-threatening injuries, permanent disabilities, hospitalizations and deaths (https://childrenshealthdefense.org/aluminum/amorphous-aluminum-hydroxyphosphate-sulfate-aahs/) Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) L-Histidine is an amino acid. One of the most common uses of L-histidine as a health supplement is for the support of joint function. It is also used to support seasonal conditions and the nervous system. Blood production may also be a benefit of L-histidine supplements (https://www.xtend-life.com/blogs/supplement-ingredients/l-histidine) Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80) Sodium Borate is a toxic white, powdery mineral used in cleaning, laundry, personal care products and even children's toys as a buffering pH adjuster. Borax is found as an ingredient in all-purpose cleaners, toilet bowl cleaners, laundry detergent laundry stain removers, air fresheners, dish detergents, glass cleaners, diaper creams, pesticides and herbicides as well as and some slimy pliable toys like playdough, gak, or silly putty (https://www.forceofnatureclean.com/chemical-free-living-sodium-borate/) Yeast protein – unable to find accurate information

Influenza (Afluria) Trivalent & Quadrivalent	sodium chloride, monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, ovalbumin, sucrose, neomycin sulfate, polymyxin B, beta-propiolactone, thimerosal (multidose vials)	Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg) Monobasic sodium phosphate and sodium dihydrogen phosphate is an inorganic compound of sodium with a dihydrogen phosphate anion. One of many sodium phosphates, it is a common industrial chemical. It is added to animal feed, toothpaste, and evaporated milk. It is used as a thickening agent and emulsifier (https://en.wikipedia.org/wiki/Monosodium_phosphate) Disodium phosphate or sodium hydrogen phosphate or sodium phosphate dibasic, is the inorganic compound. It is one of several sodium phosphates. The salt is known in anhydrous form as well as forms with 2, 7, 8, 12 hydrates. All are water-soluble white powders; the anhydrous salt being hygroscopic. It is used in conjunction with trisodium phosphate in foods and water softening treatment. In foods, it is used to adjust pH. Its presence prevents coagulation in the preparation of condensed milk. Similarly, it is used as an anti-caking additive in powdered products. It is used in desserts and puddings. In water treatment, it retards calcium scale formation. It is also found in some detergents and cleanings agents (https://en.wikipedia.org/wiki/Disodium_phosphate) Monobasic potassium phosphate has been used during isolation of protein from bacterial cells, preparation of PZM3 (defined medium for porcine embryos medium), and in the preparation of phosphate buffer saline (https://www.sigmaaldrich.com/catalog/product/sigma/p5655?lang=en&region=US) Potassium Chloride is medication is a mineral supplement used to treat or prevent low amounts of potassium in the blood. A normal level of potassium in the blood is important. Potassium helps your cells, kidneys, heart, muscles, and nerves work properly. Most people get enough potassium by eating a well-balanced diet. Some conditions that can lower your body's potassium level include severe prolonged diarrhea and vomiting, hormone problems such as hyperaldosteronism, or treatment with "water pills (https://www.webmd.com/drugs/2/drug-676-7058/potassium-chloride-oral/potassium-extended-release-dispersible-tablet-oral/details) Calcium chloride is a white crystalline salt used to de-ice roads and as a drying agent (https://www.google.com/search?ei=glfGXLW9B7Hl5gKMsqroAw&q=what+is+calcium+chloride&oq=what+is+calci

		um+chloride&gs_l=psy-ab.3..0i67l10.1226.3582..3587...0.0..0.163.163.0j1.....0....1j2..gws-wiz.....0i71.BCP7xMLIQ10) Sodium taurodeoxycholate is a bile salt related anionic detergent used for isolation of membrane proteins including inner mitochondrial membrane proteins (https://www.sigmaaldrich.com/catalog/product/sigma/t0557?lang=en&region=US) Ovalbumin is the main protein found in egg white, making up approximately 55% of the total protein. Ovalbumin displays sequence and three-dimensional homology to the serpin superfamily, but unlike most serpins it is not a serine protease inhibitor. The function of ovalbumin is unknown, although it is presumed to be a storage protein (https://en.wikipedia.org/wiki/Ovalbumin) Sucrose is a compound which is the chief component of cane or beet sugar. Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Polymyxin B is a medication used to treat bacterial infections (such as blepharitis, conjunctivitis) of the eye. It contains 2 antibiotics. Polymyxin B works by killing the bacteria. Trimethoprim works by stopping the growth of the bacteria. This medication treats only bacterial eye infections. It will not work for other types of eye infections. Unnecessary use or misuse of any antibiotic can lead to its decreased effectiveness (https://www.webmd.com/drugs/2/drug-3408/polymyxin-b-sulfate-trimethoprim-ophthalmic-eye/details) Beta-Propiolactone is an organic compound of the lactone family, with a four-membered ring. It is a colorless liquid with a slightly sweet odor, highly soluble in water and miscible with ethanol, acetone, diethyl ether and chloroform. The word propiolactone usually refers to this compound. Beta-Propiolactone readily polymerizes even at room temperature. It reacts with many nucleophiles in a ring-opening reaction. With water hydrolysis occurs to produce 3-hydroxypropionic acid. Ammonia gives the b-alaine, which is a commercial process. Propiolactone was once widely produced as an intermediate in the production of acrylic acid and its esters. That application has been largely displaced in favor of safer and less expensive alternatives. B-propiolactone is an excellent sterilizing and sporicidal agent, but its

		carcinogenicity precludes that use. The principal use of propiolactone is an intermediate in the synthesis of other chemical compounds (https://en.wikipedia.org/wiki/Beta-Propiolactone) Thimerosal is an ethyl mercury based preservative used in vials that contain more than one dose of a vaccine to prevent germs, bacteria and/or fungi from contaminating the vaccine (https://www.cdc.gov/flu/prevent/thimerosal.htm?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fflu%2Fprotect%2Fvaccine%2Fthimerosal.htm)
Influenza (Fluad)	squalene, polysorbate 80, sorbitan trioleate, sodium citrate dehydrates, citric acid monohydrate, neomycin, kanamycin, barium, egg proteins, cetyltrimethylammonium bromide (CTAB), formaldehyde	Squalene is a natural organic compound originally obtained for commercial purpose primarily from shark liver oil although plant sources are now used as well, including amaranth seed, rice bran, wheat germ, and olives. Yeast cells have been genetically engineered to produce commercially useful quantities of "synthetic" squalene. All plants and animals produce squalene as a biochemical intermediate, including humans. It occurs in high concentration in the stomach oil of birds in the order Procellariiformes. Squalene is a hydrocarbon and a triterpene, and is a precursor for synthesis of all plant and animal sterols, including cholesterol and steroid hormones in the human body (https://en.wikipedia.org/wiki/Squalene) Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80) Sorbitan Trioleate is a trimester of oleic acid and hexitol anhydrides derived from sorbitol. It functions as a surfactant and emulsifying agent. This product is a white to tan-colored solid. In cosmetics and personal care products, Sorbitan Esters are used in a variety of products including skin care products, skin cleansing products, moisturizers, eye makeup and other make up (https://www.ulprospector.com/en/na/PersonalCare/Detail/4230/122885/Sorbitan-Trioleate-SPA85) Sodium citrate dihystrate is the sodium salt of citric acid combined with 2 water molecules. It has a sour taste similar to citric acid, and is salty as well. It is often used as a food preservative, and as a flavoring in the food industry. In the pharmaceutical industry it is used to control pH. It may be used as an alkalizing agent, buffering agent, emulsifier, or sequestering agent (https://www.drugs.com/inactive/sodium-citrate-dihydrate-471.html) Citric acid is a naturally occurring fruit acid, produced commercially by microbial fermentation of a carbohydrate substrate. Citric acid is the most widely used organic acid and pH-control agent in foods, beverages, pharmaceuticals, and technical applications. Citric acid monohydrate occurs as a colorless crystals or as white, crystalline powder with a

		strongly acidic taste. It is efflorescent in dry air, very soluble in water, freely soluble in ethanol (96%) and sparingly soluble in ether (https://www.jungbunzlauer.com/en/products/citrics/citric-acid-monohydrate.html) Neomycin Sulfate is an antibiotic used to reduce the risk of infection during surgery of the bowel. Neomycin is also used to reduce the symptoms of heptic coma (https://www.google.com/search?ei=NGTEXLj5JcSu5wKSnL6oCg&q=what+is+neomycin+sulfate&oq=what+is+neomycin+sulfate&gs_l=psy-ab.3..0l5j0i22i30l4.2443.7376..7689...0.0..0.78.347.5.....0....1j2..gws-wiz.....0i71j33i10j0i131.t_X_w50HBzI) Kanamycin is an aminoglycoside bactericidal antibiotic, available in oral, intravenous, and intramuscular forms, and used to treat a wide variety of infections. Kanamycin is isolated from the bacterium Streptomyces kanamyceticus and its most commonly used form is kanamycin sulfate (https://www.drugbank.ca/drugs/DB01172) Barium is a chemical element with symbol Ba and atomic number 56. It is the fifth element in group 2 and is a soft, silvery alkaline earth metal. Because of its high chemical reactivity, barium is never found in nature as a free element. Its hydroxide, known in pre-modern times as baryta, does not occur as a mineral, but can be prepared by heating barium carbonate. The most common naturally occurring minerals of barium are barite and witherite, both insoluble in water. The name barium originates from the alchemical derivative "baryta" from Greek meaning heavy. Baric is the adjectival form of barium. Barium was identified as a new element in 1774, but not reduced to a metal until 1808 with the advent of electrolysis. Barium has few industrial applications. Historically, it was used as a getter for vacuum tubes and in oxide form as the emissive coating on indirectly heated cathodes. It is a component of YBCO and electro ceramics, and is added to steel and cast iron to reduce the size of carbon grains within the microstructure. Barium compounds are added to fireworks to impart a green color. Barium sulfate is used as an insoluble additive to oil well drilling fluid, as well as in a purer form, as X-ray radiocontrast agents for imaging the human gastrointestinal tract. The soluble barium ion and soluble compounds are poisonous, and have been used as rodenticides (https://en.wikipedia.org/wiki/Barium) Egg proteins Cetrimonium bromide is one of the components of the topical antiseptic cetrimide. The cetrimonium cation is an effective antiseptic agent against bacteria and fungi. It is also one of the main components of some buffers for the extraction of DNA. It has been widely used in synthesis of gold nanoparticles mesoporous silica nanoparticles and hair conditioning products. The closely related compounds cetrimonium chloride and cetrimonium stearate are also used as

		topical antiseptics and may be found in many household products such as shampoos and cosmetics. CTAB, due to its relatively high cost, is typically only used in select cosmetics (https://en.wikipedia.org/wiki/Cetrimonium_bromide) Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/)
Influenza (Fluarix) Quadrivalent	octoxynol-10 (TRITON X-100), α-tocopheryl hydrogen succinate, polysorbate 80 (Tween 80), hydrocortisone, gentamicin sulfate, ovalbumin, formaldehyde, sodium deoxycholate, sodium phosphate-buffered isotonic sodium chloride	Triton X-100 is a chemical compound, specifically a nonionic surfactant. It is used as a detergent in vaccines, including the following influenza vaccines: Fluarix, Flublok, and Fluzone. Apparently, detergents "promote tumors and cause cells to leak or explode by weakening their walls." Another name for Triton X-100 is octoxynol 9 or octoxynol 10 or octylphenol ethoxylate. Interestingly, octoxynol 9 is also a vaginal spermicide, designed to "strip" sperm so they are no longer able to fertilize an egg. It is used in the following vaginal spermicide reports about declining sperm counts and a doubling rates of testicular cancer in Western men (https://vaccinesbytheoutliers.wordpress.com/2017/10/15/triton-x-100-is-a-detergent-in-vaccines-it-also-destroys-sperm/) Alpha-tocopherol is the primary form of vitamin E that is preferentially used by the human body to meet appropriate dietary requirements. In particular, the RRR-alpha-tocopherol (or sometimes called the d-alpha-tocopherol steroisomer) steroisomer is considered the natural formation of alpha-tocopherol and generally exhibits the greatest bioavailability out of all of the alpha-tocopherol stereoisomers. Moreover, manufactures typically covert the phenol component of the vitamin to esters using acetic or succinic acid, making a compound such as alpha-tocopherol succinate more stable and easier to use in vitamin supplements (https://www.drugbank.ca/drugs/DB14001) Polysorbate 80 is derived from polyethoxylated sorbitan and oleic acid. The hydrophilic groups in this compound are polyether also known as polyoxymethylene groups, which are polymers of ethylene oxide. In the nomenclature of polysorbates, the numeric designation following polysorbate refers to the lipophilic group, in this case the oleic acid. Used as an emulsifier in foods (https://en.wikipedia.org/wiki/Polysorbate_80) Hydrocortisone is used to treat a variety of skin conditions (e.g., insect bites, poison oak/ivy, eczema, dermatitis, allergies, rash, itching of the outer female genitals, anal itching). Hydrocortisone reduces the swelling, itching and redness that can occur in these types of conditions. This medication is a mild corticosteroid (https://www.webmd.com/drugs/2/drug-10402-859/hydrocortisone-topical/hydrocortisone-topical/details)

		Genoptic (gentamicin sulfate ophthalmic) is an aminoglycoside antibiotic used to treat bacterial infections (such as blepharitis, conjunctivitis) of the eye and the skin around the eyes (such as eyelids). It is also used to prevent infection after eye injury or surgery. Common side effects of Genoptic include: eye stinging/burning/redness or temporary blurred vision (https://www.rxlist.com/genoptic-side-effects-drug-center.htm#consumer) Ovalbumin, the major protein constituent of chicken egg whites, is a glycoprotein that is sufficiently large and complex to be mildly immunogenic. Consequently, it is widely used as an antigen for immunization research (https://www.invivogen.com/ova-antigen). Formaldehyde is a simple chemical compound made of hydrogen, oxygen and carbon. All life forms – bacteria, plants, fish, animals and humans naturally produce formaldehyde as part of cell metabolism. Formaldehyde is perhaps best known for its preservative and anti-bacterial properties, but formaldehyde-based chemistry is used to make a wide range of values added products. Formaldehyde is one of the most well studied and well understood compounds in commerce (https://www.chemicalsafetyfacts.org/formaldehyde/) Sodium Deoxycholate is the sodium salt of deoxycholic acid, an ingredient frequently used in mesotherapy injections to break up fat cells, potentially treating cellulite. Mesotherapy is considered a non-invasive alternative to cosmetic surgery, in which the deoxycholic acid "target[s] adipose fat cells, apparently by inducing lipolysis, rupture and cell death among adipocytes," according to Wikipedia. The procedure is considered controversial and is not approved as an official cosmetic surgery, although it has been used for years to treat other conditions such as tendonitis, tendon calcification, dental procedures, cancer, cervicobrachialgia, arthritis, lymphedema, and venous stasis (https://www.truthinaging.com/ingredients/sodium-deoxycholate) Phosphate-buffered saline is a buffer solution commonly used in biological research. It is a water-based salt solution containing disodium hydrogen phosphate, sodium chloride, and in some formulations, potassium chloride and potassium dihydrogen phosphate. The buffer helps to maintain a constant pH. The osmolarity and ion concentration of the solutions match those of the human body (https://en.wikipedia.org/wiki/Phosphate-buffered_saline)
Influenza (Flublok) Quadrivalent	sodium chloride, monobasic sodium phosphate, dibasic sodium phosphate, polysorbate 20	Sodium Chloride is a colorless crystalline compound occurring naturally in seawater and halite; common salt (https://www.google.com/search?ei=x5jCXNztDe-n5wKSs414&q=what+is+sodium+chloride&oq=what+is+sodium+chloride&gs_l=psy-ab.3..0i67j0j0i131l2j0j0i131j0l4.70483.74730..74735...0.0..0.79.1216.17.....0....1j2..gws-wiz.....0i71j0i22i30.xIkUeUcWavg)

	(Tween 20), baculovirus and Spodoptera frugiperda cell proteins, baculovirus and cellular DNA, Triton X-100, lipids, vitamins, amino acids, mineral salts	Monobasic sodium phosphate and sodium dihydrogen phosphate is an inorganic compound of sodium with a dihydrogen phosphate anion. One of many sodium phosphates, it is a common industrial chemical. It is added to animal feed, toothpaste, and evaporated milk. It is used as a thickening agent and emulsifier (https://en.wikipedia.org/wiki/Monosodium_phosphate) Disodium phosphate is used in conjunction with trisodium phosphate in foods and water softening treatment. In foods, it is used to adjust pH. Its presence prevents coagulation in the preparation of condensed milk. Similarly, it is used as an anti-caking additive in powdered products. It is used in desserts and puddings. In water treatment, it retards calcium scale formation. It is also found in some detergents and cleaning agents (https://en.wikipedia.org/wiki/Disodium_phosphate) Polysorbate 20 (common commercial brand names include: Scattics, Akest TW20, and Tween 20.). It is a polysorbate-type nonionic surfactant formed by the ethoxylation of sorbitan before the addition of lauric acid. Its stability and relative nontoxicity allow it to be used as a detergent and emulsifier in a number of domestic, scientific, and pharmacological applications. As the name implies the ethoxylation process leaves the molecules with 20 repeat units of polyethylene glycol; in practice these are distributed across 4 different chins, leading to commercial product containing a range of chemical species (https://en.wikipedia.org/wiki/Polysorbate_20) Spodoptera frugiperda cells are commonly used in insect cell culture for recombinant production using baculovirus. They were originally established from ovarian tissue. They can be grown in the absence of serum and can be cultured attached or in suspension (https://en.wikipedia.org/wiki/Sf9_(cells)) Baculoviruses are from the viral family baculoviridae. They are lytic viruses, primarily pathogenic for insects. Baculovirus vector systems are often used to obtain a high level of expression of a desired protein (DNA) in insect (host) cells. These recombinant proteins have been used in research and as vaccines in both human and veterinary medical treatments. Some recombinant baculoviral vectors can infect mammalian cells (http://vaxeducation.com/vaccine-ingredients-2/baculovirus-cellular-dna-and-host-cell-proteins/) Triton X-100 is a commonly used detergent in laboratories. Triton X-100 is widely used to lyse cells to extract protein or organelles, or to permeabilize the membranes of living cells. Some applications include: industrial purpose (plating of metal), ingredient in influenza vaccine, permeabilizing unfixed (or lightly fixed) eukaryotic cell membranes, solubilizing membrane proteins in their native state in conjunction with zwitterionic detergents such as CHAPS, part of

		the lysis buffer in DNA extraction, reducing surface tension of aqueous solutions during immunostaining, dispersion of carbon materials for soft composite materials, restricting colony expansion in Aspergillus nidulans in microbiology, decellularization of animal-derived tissues, removing SDS from SDS-PAGE gels prior to renaturing the proteins within the gel, and disruption of cell monolayers as a positive control for TEER measurements. Apart from laboratory use, Triton X-100 can be found in several types of cleaning compounds ranging from heavy duty industrial products to gentle detergents. It is also a popular ingredient in homemade vinyl record cleaning fluids together with distilled water and isopropyl alcohol. It is a good micellar catalyst (https://en.wikipedia.org/wiki/Triton_X-100) Lipids are a group of naturally occurring molecules that include fats, waxes, sterols, fat-soluble vitamins (such as vitamins A, D, E and K), monoglycerides, diglycerides, triglycerides, phospholipids, and others. The main biological functions of lipids include storing energy, and acting as structural components of cell membranes. Lipids have applications in the cosmetic and food industries as well as in the nanotechnology and are used as adjuvants in vaccine productions. Common side effects include headaches, dizziness, flushing, drowsiness, nausea, vomiting, or sweating. Includes signs of infections (fever, persistent sore throat), injection site reactions (pain, swelling, redness), pain/swelling/redness of arms/legs, bluish skin, sudden weight gain, shortness of breath, back or chest pain, mental/mood changes, bone pain, muscle weakness, yellowing of skin and eyes (jaundice), dark urine, easy bruising or bleeding, severe stomach or abdominal pain, or trouble breathing (http://vaxeducation.com/vaccine-ingredients-2/lipids/) Vitamins – not specified Amino acid supplement is the branched chain amino acids are a group of three essential amino acids; leucine, isoleucine and valine. They are essential, meaning they can't be produced by your body and must be obtained from food. BCAA supplements have been shown to build muscle, decrease muscle fatigue and alleviate muscle soreness (https://www.google.com/search?ei=EMDEXMG6N-Gm_Qbf9YnADA&q=what+is+amino+acid+supplement&oq=what+is+amino+acid+supplement&gs_l=psy-ab.3..0j0i22i30l7j0i22i10i30j0i22i30.2968.5518..6016...0.0..0.300.388.1j3-1.....0....1j2..gws-wiz.....0i71j0i67.O3x-o4MnceI) Mineral salts are essential for the human body, as they help the body to function properly. They contain micro elements such as iodine, zinc, fluoride, and iron. They are used as anti-caking agents in food products, animal diet, food preservation and food seasoning. They are also used in the preparation of sodium hydroxide, caustic soda, chlorine, metallic sodium and soda ash, ceramic glazes, curing of hides, photography, nuclear reactors, home water

		softeners, mouthwash, and mineral waters. Aluminum phosphate or aluminum hydroxide (alum) are the mineral compounds most commonly used as adjuvants in human vaccines. Calcium phosphate is another adjuvant that is used in many vaccines. Hypersensitivity reactions following their administration have been reported which could be attributed to a number of factors, one of which is the production of antibodies (http://vaxeducation.com/vaccine-ingredients-2/mineral-salts/)
Influenza (Flucelvax) Quadrivalent	Madin Darby Canine Kidney (MDCK) cell protein, phosphate buffered saline, protein other than HA, MDCK cell DNA, polysorbate 80, cetyltrimethylammonium bromide, and βpropiolactone, Thimerosal (multi-dose vials)	Madin Darby Canine Kidney (MDCK) cell protein is derived by S.H Madin and N.B Darby from the kidney tissue of an adult female cocker spaniel, the MDCK cell line originated in September 1958. Since that time, the cells have been widely utilized. They are used in vaccine production. Cell lines cross contamination is a concern, there are also concerns about the contamination of cell lines by microorganisms (http://vaxeducation.com/vaccine-ingredients-2/madin-darby-canine-kidney-mdck-cell-protein/) Phosphate buffered saline are Gomori buffers, the most commonly used phosphate buffers, consist of a mixture of monobasic dihydrogen phosphate and dibasic nonhydrogen phosphate (http://vaxeducation.com/vaccine-ingredients-2/phosphate-buffers/) Protein other than HA. There is not enough information about this. MDCK cell DNA is a cell protein is derived by S.H Madin and N.B Darby from the kidney tissue of an adult female cocker spaniel, the MDCK cell line originated in September 1958. Since that time, the cells have been widely utilized. They are used in vaccine production. Cell lines cross contamination is a concern, there are also concerns about the contamination of cell lines by microorganisms (http://vaxeducation.com/vaccine-ingredients-2/madin-darby-canine-kidney-mdck-cell-protein/) Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/) Cetyltrimethylammonium bromide is a surfactant, it is an effective antiseptic agent against bacteria and fungi. It is also one of the main components of the buffer for the extraction of DNA. Simply put it is a detergent used to isolate or extract DNA by lysing the cell membranes of possible contaminants, which is where it finds it use in vaccine production. Injections into the body cavity of pregnant mice showed embryotoxic and teratogenic effects. Toxicity has also been seen in humans (http://vaxeducation.com/vaccine-ingredients-2/cetyltrimethylammonium-bromide-ctab/) Bpropiolactone is a disinfectant in vapor form to sterilize vaccines, grafts, etc. The vapor is very irritating and the liquid form is carcinogenic. It is colorless, highly reactive, liquid, cyclic either with a slightly sweet odor. Beta

		propiolactone was used once mainly in the manufacture of acrylic acid and esters. It also was used as a sterilant for medical materials and procedures. However, it is no longer used for medical disinfection. Dermal exposure to beta-propiolactone causes the burning or blistering of the skin, and ingestion of this substance burns the mouth and stomach while exposure to its vapors causes severe irritation of the eyes, throat and respiratory tract. This substance is reasonably anticipated to be a human carcinogen (https://pubchem.ncbi.nlm.nih.gov/compound/2-Oxetanone) Thiomersal is a very toxic compound which is harmful by inhalation and ingestion. It is a neoplastigen and a teratogen. Thiomersal is also dangerous for the environment (http://vaxeducation.com/vaccine-ingredients-2/thimerosal/)
Influenza (Flulaval) Quadrivalent	ovalbumin, formaldehyde, sodium deoxycholate, α-tocopheryl hydrogen succinate, polysorbate 80, thimerosal (multi-dose vials), phosphate-buffered saline solution	Ovalbumin, the major protein constituent of chicken egg whites, is a glycoprotein that is sufficiently large and complex to be mildly immunogenic. Consequently, it is widely used as an antigen for immunization research (https://www.invivogen.com/ova-antigen) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Sodium Deoxycholate is a water-soluble ionic detergent commonly used for membrane prote in and lipid isolation, cell lysis, and liposome preparation. Sodium deoxycholate causes cell death and symptoms such as burning, redness, and swelling of the skin. It has been shown to weaken the blood-brain-barrier (BBB) and subsequently activate seizures. It is also known to promote tumor growth (http://vaxeducation.com/vaccine-ingredients-2/sodium-deoxycholate/) a-tocopheryl Hydrogen Succinate are a class of organic chemical compounds, many of which have vitamin E activity. Alpha-tocopherol, is the form of vitamin E that is preferentially absorbed and accumulated in humans. It has therapeutic and antioxidant effects. Possible side effects include bleeding in the brain, birth defects, and hemolytic anemia (http://vaxeducation.com/vaccine-ingredients-2/a-tocopheryl-hydrogen-succinate-%CE%B1-tocopheryl-hydrogen-succinate/) Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/) Thimerosal is a very toxic compound which is harmful by inhalation and ingestion. It is a neoplastigen and a teratogen. Thiomersal is also dangerous for the environment (http://vaxeducation.com/vaccine-ingredients-2/thimerosal/)

		Phosphate-buffered saline solution. Gomori buffers, the mostly commonly used phosphate buffers, consist of a mixture of monobasic dihydrogen phosphate and dibasic monohydrogen phosphate (http://vaxeducation.com/vaccine-ingredients-2/phosphate-buffers/)
Influenza (Fluzone) Quadrivalent	formaldehyde, egg protein, octylphenol ethoxylate (Triton X-100), sodium phosphate buffered isotonic sodium chloride solution, thimerosal (multi-dose vials)	Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Egg protein. SPF eggs must be used for vaccine production. At 5-6 days incubation, the microorganism is inoculated into the yolk sac of the embryonated eggs, which are harvested after death of the embryo at 12-15 days. Egg-related allergy is common, particularly in children with asthma or general allergies, and may be as high as 40% in children with moderate to severe atopic dermatitis. The risk of egg-related allergy after vaccination depends on the presence of egg protein in the final product. For example, influenza vaccine is manufactured using the extra-embryonic fluids of chick embryos and contains measurable quantities of egg proteins (http://vaxeducation.com/vaccine-ingredients-2/egg-protein/) Octylphenol Ethoxylate (Triton X-100) (OPEs) are a group of related chemicals. They are chemically very similar to Nonylphenol ethoxylates (NPEs). Under normal conditions, OPEs are thick liquids or waxy solids, varying in color from clear to light orange. OPEs are widely used in cleaning agents. They are also added to paintings, coatings, treatments for textiles and chemicals used in paper manufacture. OPEs also have some medical applications. Triton X-100 is a commonly used detergent in laboratories (http://vaxeducation.com/vaccine-ingredients-2/octoxynol-10-triton-x-100/) Sodium Phosphate Buffered Isotonic Sodium Chloride Solution. Although it is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…Similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Thimerosal is a very toxic compound which is harmful by inhalation and ingestion. It is a neoplastigen and a teratogen. Thiomersal is also dangerous for the environment (http://vaxeducation.com/vaccine-ingredients-2/thimerosal/)

Influenza (Fluzone) High Dose	egg protein, octylphenol ethoxylate (Triton X-100), sodium phosphate-buffered isotonic sodium chloride solution, formaldehyde	Egg protein. SPF eggs must be used for vaccine production. At 5-6 days incubation, the microorganism is inoculated into the yolk sac of the embryonated eggs, which are harvested after death of the embryo at 12-15 days. Egg-related allergy is common, particularly in children with asthma or general allergies, and may be as high as 40% in children with moderate to severe atopic dermatitis. The risk of egg-related allergy after vaccination depends on the presence of egg protein in the final product. For example, influenza vaccine is manufactured using the extra-embryonic fluids of chick embryos and contains measurable quantities of egg proteins (http://vaxeducation.com/vaccine-ingredients-2/egg-protein/) Octylphenol Ethoxylate (Triton X-100) (OPEs) are a group of related chemicals. They are chemically very similar to Nonylphenol ethoxylates (NPEs). Under normal conditions, OPEs are thick liquids or waxy solids, varying in color from clear to light orange. OPEs are widely used in cleaning agents. They are also added to paintings, coatings, treatments for textiles and chemicals used in paper manufacture. OPEs also have some medical applications. Triton X-100 is a commonly used detergent in laboratories (http://vaxeducation.com/vaccine-ingredients-2/octoxynol-10-triton-x-100/) Sodium Phosphate Buffered Isotonic Sodium Chloride Solution. Although it is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…Similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/).
Influenza (FluMist) Quadrivalent	monosodium glutamate, hydrolyzed porcine gelatin, arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate,	Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn

	ovalbumin, gentamicin sulfate, ethylenediaminetetra acetic acid (EDTA)	laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/) Hydrolyzed porcine gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine), and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Arginine is a chemical building block called "an amino acid." It is obtained from the diet and is necessary for the body to make proteins. L-arginine is found in red meat, poultry, fish, and dairy products. It can also be made in a laboratory and used as medicine (https://www.webmd.com/vitamins/ai/ingredientmono-875/l-arginine) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Dibasic potassium phosphate is a highly water-soluble salt which is often used as a fertilizer, food additive, and buffering agent. It is a common source of phosphorous and potassium. A dipotassium phosphate solution is formed by the stoichiometric reaction of phosphoric acid with two equivalents of potassium hydroxide (https://en.wikipedia.org/wiki/Dipotassium_phosphate). Monobasic potassium phosphate (MKP) is a soluble salt of potassium and the dihydrogen phosphate ion which is used as a fertilizer, a food additive and a fungicide. It is a source of phosphorous and potassium. It is also a buffering agent in vaccine production. Adverse reactions include Cardiovascular problems including hypotension and myocardial infarction. The following events have been reported but are uncommon: fluid retention as indicated by swelling of feet or lower legs or weight gain. Hyperkaliemia leading to confusion, tiredness or weakness, irregular or slow heart rate, numbness or tingling around lips, hands or feet, unexplained anxiety, weakness or heaviness of legs, shortness of breath or troubled breathing. Hypernatraemia leading to confusion, tiredness or weakness, convulsions, oliguria or decreased frequency of micturition, tachycardia, headache or dizziness, increased thirst. Hyperphosphataemia, hypocalcarmia or

		hhypomagnesaemia leading to convulsions, muscle cramps, numbness, tingling, pain or weakness in hands or feet, shortness of breath or troubled breathing, tremor (http://vaxeducation.com/vaccine-ingredients-2/monobasic-potassium-phosphate/) Ovalbumin is a key reference protein for vaccination experiments. Ovalbumin, the major protein constituent of chicken egg whites, is a glycoprotein that is sufficiently large and complex to be mildly immunogenic. Consequently, it is widely used as an antigen for immunization research (https://www.invivogen.com/ova-antigen) Gentamicin sulfate is an aminoglycoside antibiotic. Gentamicin can cause deafness or a loss of equilibrioception. Gentamicin can also be highly nephrotoxic, particularly if multiple doses accumulate over a course of treatment (http://vaxeducation.com/vaccine-ingredients-2/gentamicin-sulfate/) Ethylenediaminetetraacetic acid (EDTA) is a prescription medicine, given by injection into the vein or into the muscle. Intravenous EDTA is used to treat lead poisoning and brain damage caused by lead poisoning; to see how well therapy for suspected lead poisoning is working; to treat poisonings by radioactive materials such as plutonium, thorium, uranium, and strontium; for removing copper in patients with a genetic disease called Wilson's disease; and for reducing levels of calcium in people whose levels are too high. EDTA is also used intravenously for heart and blood vessel conditions including irregular heartbeat due to exposure to chemicals called cardiac glycosides, "hardening of the arteries", chest pain, high blood pressure, high cholesterol, stroke, and blood circulation problems (https://www.webmd.com/vitamins/ai/ingredientmono-1032/edta)
Japanese Encephalitis (Ixiaro)	aluminum hydroxide, protamine sulfate, formaldehyde, bovine serum albumin, host cell DNA, sodium metabisulphite, host cell protein	Aluminum hydroxide is used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminium-containig macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce more erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) Protamine sulfate is a drug that reverses the anticoagulant effects of heparin by binding to it. It was originally isolated from the sperm of salmon and other species of fish but is now produced primarily through recombinant biotechnology. It is used during heart surgeries and in heparin overdose, it is also used as an excipient in vaccine manufacturing to remove contaminating DNA and proteins. Adverse effects include uncontrollable bleeding, hypotension, circulatory

		collapse and pulmonary edema. It can also cause severe life-threatening allergic reaction in people with allergy to fish (http://vaxeducation.com/vaccine-ingredients-2/protamine-sulfate/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/) Host cell DNA – could not find enough credible information. Sodium metabisulphite or sodium pyrosulfite is an inorganic compound of chemical formula Na2S205. It is used as a disinfectant, antioxidant, and preservative agent. It is considered hazardous and is harmful to aquatic life, it can cause allergic reactions (http://vaxeducation.com/vaccine-ingredients-2/sodium-metabisulphite/) Host cell proteins are process-related impurities, expressed by the host cell used for production of biopharmaceutical proteins. During the purification process, the majority of the HCPs a removed but small HCP amounts remain in the distributed products, such as monoclonal antibodies, antibody-drug-conjugates, therapeutic proteins, vaccines, and other protein-based biopharmaceuticals (https://en.wikipedia.org/wiki/Host_cell_protein)
Meningococcal (MenACWY-Menactra)	Watson Scherp media containing casamino acid, modified culture medium containing hydrolyzed casein, ammonium sulfate, sodium phosphate,	Watson Scherp media containing casamino acid – not enough credible information found. Modified culture medium containing hydrolyzed casein is the basic medium contains: pancreatic digest (enzymes from the pancreases of an animal) of casein, glucose, cysteine, tyrosine, Mineral salts (sodium, magnesium, phosphate, potassium) (http://vaxeducation.com/vaccine-ingredients-2/mueller-and-miller-medium-mueller-miller-casamino-acid-medium-without-beef-heart-infusion-modified-mueller-and-miller-medium-modified-muellers-growth-medium-modified-muellers-m/)

	formaldehyde, sodium chloride	Ammonium sulfate. EDF suspected – gastrointestinal or liver toxicant, neurotoxicant, respiratory toxicant. Ammonium sulfate has not been evaluated for carcinogenic potential by the International Agency for Research on Cancer or the U.S. EPA. Ammonium sulfate is registered as a pesticide adjuvant. It is used to facilitate the application of other pesticides and as a synthetic fly attractant. Inhalation of ammonium sulfate for short durations can impair respiratory functionality in asthmatics (http://vaxeducation.com/vaccine-ingredients-2/ammonium-sulfate/) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details)
Meningococcal (MenACWY-Menveo)	formaldehyde, amino acids, yeast extract, Franz complete medium, CY medium	Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Amino acids are organic compounds that combine to form proteins. Amino acids and proteins are the building blocks of life. When proteins are digested or broken down, amino acids are left. The human body uses amino acids to make proteins to help the body: break down food, grow, repair body tissue, perform many other body functions. Amino acids can also be used as a source of energy by the body. Amino acids are classified into three groups: 1) essential amino acids, 2) nonessential amino acids, and 3) conditional amino acids. Essential amino acids cannot be made by the body. As a result, they must come from food. The 9 essential amino acids are: histidine, isoleucine, leucine, lysine, methionine, phenlyalaine, threonine, tryptophan, and valine (https://medlineplus.gov/ency/article/002222.htm)

		Yeast extract. There has been evidence that the ingestion of genetically modified (GMO) yeast may be detrimental to human health. It is not well studied what effects direct injection into the bloodstream may have. But yeast has been implicated to cause anaphylactic reactions, allergies, death. There are concerns that yeast and yeast extracts or proteins are linked to many autoimmune diseases. These diseases happen when the body's own defense system turns on itself, resulting in life-eroding conditions like rheumatoid arthritis, Crohn's disease, inflammatory bowl disease, systemic, lupus erythematosus, anto-phospholipid syndrome, multiple sclerosis, diabetes, mellitus type 1, and even heart disease (http://vaxeducation.com/vaccine-ingredients-2/yeast-extract/). Franz complete medium was designed for culturing pathogenic bacteria to produce an immunogenic factor. The medium comprises non-animal derived proteinaceous material. It is used to cultivate pathogenic bacteria, obtain immunogenic factors from the bacteria being cultivated and prepare vaccines using the immogenic factors, wherein the non-animal derived proteinaceous material is a soy bean or yeast derived protein. Possible adverse effects will be related to adverse effects from the soy or yeast protein in form of allergies (http://vaxeducation.com/vaccine-ingredients-2/franz-complete-medium/) CY medium is a complex medium whose main constituents are; a carbon source such as glucose for bacterial growth, water, various salts needed for bacterial growth a source of amino acids and nitrogen (from yeast extract). It is designed to support the growth of microorganisms and cells. Adverse effects include those of individual components of the media, and from pathogens which could contaminate the cultured cell, also yeast extract can cause severe hypersensitivity reaction (http://vaxeducation.com/vaccine-ingredients-2/cy-medium/)
Meningococcal (MenB – Bexsero)	aluminum hydroxide, E. coli, histidine, sucrose, deoxycholate, kanamycin	Aluminum hydroxide adjuvants are used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas, and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum-containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia, and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) E. coli is a bacterium of the genus Escherichia, that is commonly found in the lower intestine of warm-blooded organisms. The harmless strains are part of the normal flora of the gut, while harmful strains can cause life threatening infections. E coli plays an important role in modern biological engineering and industrial microbiology. Modified E. coli cells have been used in vaccine development. Adverse effects from accidental injection, can cause local tissue

		reactions of a granulomatous nature and in a number of cases necrosis or abscesses (http://vaxeducation.com/vaccine-ingredients-2/e-coli/) Histidine is an amino acid. Amino acids are the building blocks of protein in our bodies. Histidine is used for rheumatoid arthritis, allergic diseases, ulcers, and anemia caused by kidney failure or kidney dialysis. It is involved in a wide range of the metabolic process in the body. It may have some immunomodulatory as well as antioxidant activity (http://vaxeducation.com/vaccine-ingredients-2/histidine/) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Deoxycholic acid is a bile acid. Deoxycholic acid is one of the secondary bile acids, which are metabolic by-products of intestinal bacteria. In the human body deoxycholic acid is used in the emulsification of fats, for the absorption in the intestine. Its function as a detergent and isolating agent for membrane proteins, also suits it for production of vaccine where it is used as sodium deoxycholate. Sodium deoxycholate causes cell death and symptoms such as burning, redness, and swelling of the skin. It has been shown to weaken the blood-brain-barrier (BBB) and subsequently activate seizures. It is also known to promote tumor growth (http://vaxeducation.com/vaccine-ingredients-2/deoxycholate/) Kanamycin. Common side effects include changes in hearing (either hearing loss or ringing in the ears), toxicity to kidneys, and allergic reactions to the drug (http://vaxeducation.com/vaccine-ingredients-2/kanamycin-antibiotic/)
Meningococcal (MenB – Trumenba)	defined fermentation growth media, polysorbate 80, aluminum phosphate, histidine buffered saline	Defined fermentation growth media is the intentional use of fermentation by microorganisms such as bacteria and fungi as well as eukaryotic cells like CHO cells and insect cells, to make products useful to humans. Fermented products have applications such as food as well as in general industry. Some commodity chemicals, such as acetic acid, citric acid, and ethanol are made by fermentation. The rate of fermentation depends on the concentration of microorganisms, cells, cellular components, and enzymes as well as temperature, pH, and for aerobic fermentation oxygen. Product recovery frequently involves the concentration of the dilute solution. Nearly all commercially produced enzymes, such as lipase, invertase and rennet, are made by fermentation with genetically modified microbes. In some cases, production of biomass itself is the objection, as in the case of baker's yeast and lactic acid bacteria starter cultures for cheesemaking (https://en.wikipedia.org/wiki/Industrial_fermentation)

		Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/) Aluminum phosphate adjuvants are used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas, and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum-containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia, and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) Histidine is an amino acid. Amino acids are the building blocks of protein in our bodies. Histidine is used for rheumatoid arthritis, allergic diseases, ulcers, and anemia caused by kidney failure or kidney dialysis. It is involved in a wide range of the metabolic process in the body. It may have some immunomodulatory as well as antioxidant activity (http://vaxeducation.com/vaccine-ingredients-2/histidine/)
MMR (MMR-II)	chick embryo cell culture, WI-38 human diploid lung fibroblasts, vitamins, amino acids, fetal bovine serum, sucrose, glutamate, recombinant human albumin, neomycin, sorbitol, hydrolyzed gelatin, sodium phosphate, sodium chloride	Chick embryo cell culture is a sterile lyophilized vaccine obtained by growing the fixed rabies virus strain Flury LEP-25 in primary cultures of chick fibroblasts. The virus is inactivated with B-propiolactone, purified and concentrated by zonal centrifugation (https://www.who.int/vaccine_safety/initiative/tools/Rabies_Vaccine_rates_information_sheet.pdf) WI-28 human diploid lung fibroblasts. Is a diploid human cell culture line composed of fibroblasts derived from lung tissue of an aborted white female fetus. The cell line was isolated in the 1960's and has been used extensively in scientific research, with applications ranging from developing important theories in molecular biology to the production of many types of vaccines (http://vaxeducation.com/vaccine-ingredients-2/wi-38-human-diploid-lung-fibroblasts/) Vitamins – not enough information found. Amino acids are organic compounds that combine to form proteins. Amino acids and proteins are the building blocks of life. When proteins are digested or broken down, amino acids are left. The human body uses amino acids to make proteins to help the body: break down food, grow, repair body tissue, perform many other body functions. Amino acids can also be used as a source of energy by the body. Amino acids are classified into three groups: 1) essential amino acids, 2) nonessential amino acids, and 3) conditional amino acids. Essential amino acids cannot be made by the body.

		As a result, they must come from food. The 9 essential amino acids are: histidine, isoleucine, leucine, lysine, methionine, phenlyalaine, threonine, tryptophan, and valine (https://medlineplus.gov/ency/article/002222.htm) Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Glutamate is an amino acid found in high concentration in every part of the body. In the nervous system is plays a special additional role as a neurotransmitter: a chemical that nerve cells used to send signals to other cells. It is used as a stabilizer in vaccine production. Glutamate has been implicated in epileptic seizures, toxicity may result in, stroke or epilepsy. It can also cause pain at injection site (http://vaxeducation.com/vaccine-ingredients-2/glutamate/) Recombinant human albumin. Genetically engineered human albumin derived from yeast. Just like human Albumin it can be used for treating a variety of conditions, including shock due to blood loss in the body, burns, low protein levels due to surgery or liver failure, and as an additional medicine in bypass surgery. It works by increasing plasma volume or serum albumin levels. Side effects include anaphylactoid reactions, fever, chills, rash, nausea, vomiting, tachycardia. Dermatologic side effects have included urticaria, skin rash, pruritus, edema, and erythema. Nervous system side effects have included headache, chills, and febrile reactions. Cardiovascular side effects have included hypotension. Gastrointestinal side effects have included nausea, vomiting and increased salivation. Respiratory side effects have included bronchospasm (http://vaxeducation.com/vaccine-ingredients-2/recombinant-human-albumin/) Neomycin interferes with Vitamin B6 absorption. An error in the uptake of B6 can cause a rare form of epilepsy and intellectual disabilities (http://vaxeducation.com/vaccine-ingredients-2/neomycin/) Sorbitol. There is a growing opinion within the medical community that it should be listed as an active ingredient, because too much Sorbitol can cause severe gastro-intestinal problems. Too much sorbitol in cells can cause damage.

		Sorbitol can also aggravate irritable bowel syndrome and fructose malabsorption (http://vaxeducation.com/vaccine-ingredients-2/sorbitol/) Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine) and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details)
MMRV (ProQuad) (Frozen)	chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells, sucrose, hydrolyzed gelatin, sodium chloride, sorbitol, monosodium L-glutamate, sodium phosphate dibasic, human albumin, sodium bicarbonate, potassium phosphate monobasic,	Chick embryo cell culture is a sterile lyophilized vaccine obtained by growing the fixed rabies virus strain Flury LEP-25 in primary cultures of chick fibroblasts. The virus is inactivated with B-propiolactone, purified and concentrated by zonal centrifugation (https://www.who.int/vaccine_safety/initiative/tools/Rabies_Vaccine_rates_information_sheet.pdf) WI-38 human diploid lung fibroblasts. Is a diploid human cell culture line composed of fibroblasts derived from lung tissue of an aborted white female fetus. The cell line was isolated in the 1960's and has been used extensively in scientific research, with applications ranging from developing important theories in molecular biology to the production of many types of vaccines (http://vaxeducation.com/vaccine-ingredients-2/wi-38-human-diploid-lung-fibroblasts/) MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5)

	potassium chloride; potassium phosphate dibasic, neomycin, bovine calf serum	Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine) and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Sorbitol. There is a growing opinion within the medical community that it should be listed as an active ingredient, because too much Sorbitol can cause severe gastro-intestinal problems. Too much sorbitol in cells can cause damage. Sorbitol can also aggravate irritable bowel syndrome and fructose malabsorption (http://vaxeducation.com/vaccine-ingredients-2/sorbitol/) Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/)

		Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Human serum albumin is the version of serum albumin found in human blood. It is the most abundant protein in human blood plasma; it constitutes about half of serum protein. It is produced in the liver. In the human body, albumin transports hormones, fatty acids, and other compounds, buffers pH and maintains oncotic pressure, among other functions. It is also used as a preservative and stabilizer to help vaccines remain unchanged. There are concerns about the safety of medical derived from human blood like the Human serum albumin and the risk of viral and prion disease transmission. Side effects include fever, chills, skin rash, vomiting and increased salivation among others (http://vaxeducation.com/vaccine-ingredients-2/human-serum-albumin/) Sodium bicarbonate kills fleas and drives away ants. If it is applied to pet's fur, it must be washed/rinsed off to prevent skin problems. Mix into a paste to clean the surface of an iron. Use to clean Kool aid, wine, and coffee stains (http://vaxeducation.com/vaccine-ingredients-2/sodium-bicarbonate/) Potassium phosphate is a generic term for the salt of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness, or headache. May also cause bone/joint aches, muscle cramps, stomach pain, confusion, fast/irregular heartbeat, unusually weakness, tingling/numbness of the hands/feet, and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate/) Potassium chloride is also commonly known as "Muriate of Potash" and is used in medicine, scientific applications, and judicial execution through lethal injection. The majority of the potassium chloride produced is used for making fertilizer. Side effects can include gastrointestinal discomfort including nausea and vomiting, diarrhea and bleeding of the gut. Orally it is toxic in excess, high doses can cause cardiac arrest and rapid death (http://vaxeducation.com/vaccine-ingredients-2/potassium-chloride/) Potassium phosphate dibasic is a generic term for the salts of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness, headache. May also cause bone/joint aches, muscle cramps, stomach pain, confusion,

		fast/irregular heartbeat, unusual weakness, tingling/numbness of the hands/feet and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate-dibasic/) Neomycin interferes with Vitamin B6 absorption. An error in the uptake of B6 can cause a rare form of epilepsy and intellectual disabilities (http://vaxeducation.com/vaccine-ingredients-2/neomycin/) Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/)
MMRV (ProQuad) (Refrigerator Stable)	chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells, sucrose, hydrolyzed gelatin, urea, sodium chloride, sorbitol, monosodium L-glutamate, sodium phosphate, recombinant human albumin, sodium bicarbonate, potassium phosphate, potassium chloride, neomycin, bovine serum albumin	Chick embryo cell culture is a sterile lyophilized vaccine obtained by growing the fixed rabies virus strain Flury LEP-25 in primary cultures of chick fibroblasts. The virus is inactivated with B-propiolactone, purified and concentrated by zonal centrifugation (https://www.who.int/vaccine_safety/initiative/tools/Rabies_Vaccine_rates_information_sheet.pdf) WI-38 human diploid lung fibroblasts. Is a diploid human cell culture line composed of fibroblasts derived from lung tissue of an aborted white female fetus. The cell line was isolated in the 1960's and has been used extensively in scientific research, with applications ranging from developing important theories in molecular biology to the production of many types of vaccines (http://vaxeducation.com/vaccine-ingredients-2/wi-38-human-diploid-lung-fibroblasts/) MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine) and bone. It is water soluble and contains peptides like amino acids.

		Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Sorbitol. There is a growing opinion within the medical community that it should be listed as an active ingredient, because too much Sorbitol can cause severe gastro-intestinal problems. Too much sorbitol in cells can cause damage. Sorbitol can also aggravate irritable bowel syndrome and fructose malabsorption (http://vaxeducation.com/vaccine-ingredients-2/sorbitol/) Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Human serum albumin is the version of serum albumin found in human blood. It is the most abundant protein in human blood plasma; it constitutes about half of serum protein. It is produced in the liver. In the human body, albumin transports hormones, fatty acids, and other compounds, buffers pH and maintains oncotic pressure, among other functions. It is also used as a preservative and stabilizer to help vaccines remain unchanged. There are concerns about the safety of medical derived from human blood like the Human serum albumin and the risk of viral and prion disease transmission. Side effects include fever, chills, skin rash, vomiting and increased salivation among others (http://vaxeducation.com/vaccine-ingredients-2/human-serum-albumin/)

		Sodium bicarbonate kills fleas and drives away ants. If it is applied to pet's fur, it must be washed/rinsed off to prevent skin problems. Mix into a paste to clean the surface of an iron. Use to clean Kool aid, wine, and coffee stains (http://vaxeducation.com/vaccine-ingredients-2/sodium-bicarbonate/) Potassium phosphate is a generic term for the salt of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness, or headache. May also cause bone/joint aches, muscle cramps, stomach pain, confusion, fast/irregular heartbeat, unusually weakness, tingling/numbness of the hands/feet, and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate/) Potassium chloride is also commonly known as "Muriate of Potash" and is used in medicine, scientific applications, and judicial execution through lethal injection. The majority of the potassium chloride produced is used for making fertilizer. Side effects can include gastrointestinal discomfort including nausea and vomiting, diarrhea and bleeding of the gut. Orally it is toxic in excess, high doses can cause cardiac arrest and rapid death (http://vaxeducation.com/vaccine-ingredients-2/potassium-chloride/) Neomycin interferes with Vitamin B6 absorption. An error in the uptake of B6 can cause a rare form of epilepsy and intellectual disabilities (http://vaxeducation.com/vaccine-ingredients-2/neomycin/) Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/)
Pneumococcal (PCV13 – Prevnar 13)	soy peptone broth, casamino acids and yeast extract-based medium, CRM197 carrier protein, polysorbate 80, succinate buffer, aluminum phosphate	Soy peptone is obtained by the enzymatic digestion of soya flour. It is widely used in culture media and is often used for the cultivation of many organisms. Soybeans contain phytoestrogens, which mimic the body's natural estrogen hormones. For men, this can lead to a testosterone imbalance, infertility, low sperm county, and increased risk of cancers. For women, it can cause estrogen dominance, which has been linked to infertility, menstrual troubles and cancer (http://vaxeducation.com/vaccine-ingredients-2/soy-peptone-broth/)

		Casamino acids is a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media. It has all the essential amino acids except tryptophan, which becomes almost destroyed when digested sulfuric or hydrochloric acid (https://en.wikipedia.org/wiki/Casamino_acid) CRM197 is a non-toxic mutant of diphtheria toxin, currently used as a carrier protein for polysaccharides and happens to make them immunogenic. There is some dispute about the toxicity of CRM197, with evidence that it is toxic to yeast cells and some mammalian cell lines (https://en.wikipedia.org/wiki/CRM197) Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/) Succinate buffer keeps the pH of a solution constant. Succinate buffer is prepared by dissolving succinic acid in distilled water (http://vaxeducation.com/vaccine-ingredients-2/succinate-buffer/) Aluminum phosphate adjuvants are used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas, and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum-containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia, and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/)
Pneumococcal (PPSV-23 – Pneumovax)	phenol	Phenol red (also known as phenolsulfonphthalein or PSP) is a pH indicator frequently used in cell biology laboratories. The primary used of phenol is in the production of phenolic resins, which are used in the plywood, construction, automotive, and appliance industries. Phenol has anesthetic properties. It is also used in the production of drugs, weed killers, and synthetic resins. Exposure of the skin to concentrated phenol solutions causes chemical burns which may be severe. Phenol was also used as a mean of extermination by the Nazis during the Second World War. Phenol injections were given to thousands of people in concentration camps, especially at Auschwitz-Birkenau (http://vaxeducation.com/vaccine-ingredients-2/phenol/)
Polio (IPV – Ipol)	Eagle MEM modified medium, calf bovine serum, M-199 without calf bovine serum, vero	Eagle MEM modified medium is a cell culture medium. It is a modification of Basal Medium Eagle (BME). It was developed to meet the specific nutritional requirements, of certain subtypes of cell. It contains: amino acids, salts, Just like any other cell culture medium, adverse effects include those of individual components, and from pathogens which could contaminate the cultured cells (http://vaxeducation.com/vaccine-ingredients-2/eagle-mem-modified-medium/)

	cells (a continuous line of monkey kidney cells), phenoxyethanol, formaldehyde, neomycin, streptomycin, polymyxin B	Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/) M-199. A complex medium of amino acids, mineral salts, vitamins, polysorbate 80 and other substances diluted in water for injections. Medium 199 is used as a growth medium with broad species application in vaccine production. Many early tissue culture media were predominantly formulated from animal products and/or tissue extracts (http://vaxeducation.com/vaccine-ingredients-2/medium-199/) Vero cells are monkey kidney cells that come from African Green monkeys. They are known to contain SV40 (simian virus 40) which is a monkey virus that grows in monkey tissue (particularly kidneys). In two separate studies there were reports of SV40 in non-Hodgkin's lymphoma tumors. The vero epithelial cell line was established in 1962 in Japan. The tissue from which the line was derived, was obtained from the kidney of a healthy adult African green monkey. Vero cells are a lineage of cells used in cell cultures in transfections and vaccine production. Persuasive evidence now indicates that SV40 is causing infections in humans today and represents an emerging pathogen. There is a significant excess risk of SV40 associated with human primary brain cancers, primary bone cancers, malignant mesothelioma, and non-Hodgkin's lymphoma (http://vaxeducation.com/vaccine-ingredients-2/monkey-kidney-cells/) Phenoxyethanol is a vaccine preservative and potential allergen, which may result in a nodular reaction at the site of injection. It reversibly inhibits NMDAR-mediated ion currents. Ingestion may cause CNS and respiratory depression, vomiting and diarrhea in infants, particularly when combined with chlorphenesin (https://en.wikipedia.org/wiki/Phenoxyethanol) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Neomycin interferes with Vitamin B6 absorption. An error in the uptake of B6 can cause a rare form of epilepsy and intellectual disabilities (http://vaxeducation.com/vaccine-ingredients-2/neomycin/)

		Streptomycin. This medication is used with other medications to treat active tuberculosis (TB) infection if you cannot take other drugs for TB or if you have a type of TB that cannot be treated with other drugs. Streptomycin belongs to a class of drugs known as aminoglycoside antibiotics. It works by killing the organisms that cause the infection. This drug may also be used to treat other serious infections along with other medications. This medication is given by injection, usually into a muscle as directed by your doctor. When you start treatment for TB, it is usually given once a day or as directed by your doctor. It is important to change the location of the injection site daily to avoid problem areas under the skin. If you have any questions about using this medication properly, consult your doctor or pharmacist. Dosage is based on the kind of infection, your weight, medical condition, streptomycin blood levels, and side effects. How often you receive injections and the length of your treatment will depend on the type of infection you have and your response to treatment (https://www.webmd.com/drugs/2/drug-11249/streptomycin-intramuscular/details) Polymyxin B is a mixture of polymyxins B1 and B2, obtained from Bacillus polymyxa strains. They are basic polypeptides of about eight amino acids and have cationic detergent action on cell membranes. Polymyxin B is used for infections with gram-negative organisms, but may be neurotoxic and nephrotoxic. Polymyxin B sulfate is an antibiotic, the drug of choice in the treatment of infections of the urinary tract, meinges and bloodstream caused by susceptible strains of Ps. Aeruginosa. Adverse side effects include signs of renal damage, it is also neurotoxic. It can cause pain and rash at injection site (http://vaxeducation.com/vaccine-ingredients-2/polymyxin-b/)
Rabies (Imovax)	human albumin, neomycin sulfate, phenol red indicator, MRC-5 human diploid cells, betapropriolactone	Human serum albumin is the version of serum albumin found in human blood. It is the most abundant protein in human blood plasma; it constitutes about half of serum protein. It is produced in the liver. In the human body, albumin transports hormones, fatty acids, and other compounds, buffers pH and maintains oncotic pressure, among other functions. It is also used as a preservative and stabilizer to help vaccines remain unchanged. There are concerns about the safety of medical derived from human blood like the Human serum albumin and the risk of viral and prion disease transmission. Side effects include fever, chills, skin rash, vomiting and increased salivation among others (http://vaxeducation.com/vaccine-ingredients-2/human-serum-albumin/) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Phenol red (also known as phenolsulfonphthalein or PSP) is a pH indicator frequently used in cell biology laboratories. The primary used of phenol is in the production of phenolic resins, which are used in the plywood, construction, automotive, and appliance industries. Phenol has anesthetic properties. It is also used in the production of drugs, weed

		killers, and synthetic resins. Exposure of the skin to concentrated phenol solutions causes chemical burns which may be severe. Phenol was also used as a mean of extermination by the Nazis during the Second World War. Phenol injections were given to thousands of people in concentration camps, especially at Auschwitz-Birkenau (http://vaxeducation.com/vaccine-ingredients-2/phenol/) MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5) Beta-propiolactone. The vapor is very irritating and the liquid form is carcinogenic. Propiolactone is "reasonably expected to be a human carcinogen." Recognized -carcinogen, suspected – gastrointestinal or live toxicant, respiratory toxicant, skin or sense organ toxicant. More hazardous than most chemicals in 3 out of 3 ranking systems. One at least 5 federal regulatory lists. Ranked as one of the most hazardous compounds (worst 10%) to humans. Propiolactone was once widely used in the manufacture of acrylic acid and its easier, but is use has been mostly phased out in favor of safer and less expensive alternatives (http://vaxeducation.com/vaccine-ingredients-2/beta-propiolactone/)
Rabies (RabAvert)	chicken fibroblasts, β-propiolactone, polygeline (processed bovine gelatin), human serum albumin, bovine serum, potassium glutamate, sodium EDTA, ovalbumin, neomycin, chlortetracycline, amphotericin B	Chicken fibroblasts is a type of biological cell that synthesizes the extracellular matrix and collagen produces the structural framework for animal tissues, and plays a critical role in wound healing. Fibroblasts are the most common cells of connective tissue in animals (https://en.wikipedia.org/wiki/Fibroblast) B-propiolactone is an organic compound of the lactone family, with a four-membered ring. It is a colorless liquid with a slightly sweet odor, highly soluble in water and miscible with ethanol, acetone, diethyl ether and chloroform. The word propiolactone usually refers to this compound, although it may also refer to a-propiolactone (https://en.wikipedia.org/wiki/Beta-Propiolactone) Polygeline is a gelatin derive plasma, produced from bovine bones and used in vaccine production. There are concerns about the risk of transmitting infections from materials derived from animals, like mad cow disease and allergy to gelatin (http://vaxeducation.com/vaccine-ingredients-2/polygeline-processed-bovine-gelatin/) Human serum albumin is the version of serum albumin found in human blood. It is the most abundant protein in human blood plasma; it constitutes about half of serum protein. It is produced in the liver. In the human body, albumin transports hormones, fatty acids, and other compounds, buffers pH and maintains oncotic pressure, among other functions. It is also used as a preservative and stabilizer to help vaccines remain unchanged. There are concerns about

		the safety of medical derived from human blood like the Human serum albumin and the risk of viral and prion disease transmission. Side effects include fever, chills, skin rash, vomiting and increased salivation among others (http://vaxeducation.com/vaccine-ingredients-2/human-serum-albumin/) Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/) Potassium glutamate (MPG) is a chemical compound, it is a potassium acid salt of glutamic acid. It is used in foods as a flavor enhancer. It is non-sodium MSG alternative (http://vaxeducation.com/vaccine-ingredients-2/potassium-glutamate/) Sodium EDTA is a disodium salt is a chelating agent, that sequesters a variety of cations such as calcium. It is used in pharmaceutical manufacturing and as a food additive. Side effects include: hypotension, hypocalcemia, burning at the injection site, thrombophlebitis, nausea and vomiting (http://vaxeducation.com/vaccine-ingredients-2/sodium-edta/) Ovalbumin is the main protein found in egg white, making up approximately 55% of the total protein. Ovalbumin displays sequence and three-dimensional homology to the serpin superfamily, but unlike most serpins it is not a serine protease inhibitor. The function of ovalbumin is unknown, although it is presumed to be a storage protein (https://en.wikipedia.org/wiki/Ovalbumin) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Chlortetracycline is a tetracycline antibiotic. Tetracyclines are a group of broad-spectrum antibiotics generally used in the treatment of infections of the urinary tract, respiratory tract, and the intestines and are also used in the treatment of chlamydia. Chlortetracycline is of semi synthetic origin, isolated from the bacteria Streptomyces aureofaciens. It is used as an antiprotozoal and antibacterial. It is also used in vaccine production. Chlortetracycline (HCI) produces potentially life-threatening effects which includes photo toxicity, fatal liver damage, anaphylaxis, effects on classified

		tissues, hepatic, necrosis, fatal necrosis and fatal liver damage (http://vaxeducation.com/vaccine-ingredients-2/chlortetracycline/). Amphotericin B is a drug used to treat fungus infections. Known allergy to this drug prohibits used. Side effects include blood clots, blood defects, kidney problems, nausea, and fever. When used on the skin, allergic reactions can occurr. Very often a most serious acute reaction after the infusion is noted consisting of fever, shaking chills, hypotension, anorexia, nausea, vomiting, headache, dyspnea, and tachypnea, nephrotoxicity is a major tissue and can be severe and/or irreversible. Electrolyte imbalances may also occur (http://vaxeducation.com/vaccine-ingredients-2/amphotericin-b/)
Rotavirus (RotaTeq)	sucrose, sodium citrate, sodium phosphate monobasic monohydrate, sodium hydroxide, polysorbate 80, cell culture media, fetal bovine serum, vero cells [DNA from porcine circoviruses (PCV) 1 and 2 has been detected in RotaTeq. PCV-1 and PCV-2 are not known to cause disease in humans.]	Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Sodium citrate may refer to any of the sodium salts of citric acid. Sodium citrates are used as acidity regulators in food and drinks, and also as emulsifiers for oils. They enable cheeses to melt without becoming greasy. Sodium citrate/acid is also useful as a buffer and neutralizing agent for gastric acid. Side effects of citric acid and sodium citrate include muscle twitching or cramps swelling or weight gain, weakness, mood changes, rapid and shallow breathing, fast heart rate, restless feeling, black or bloody stools, severe diarrhea or seizure (http://vaxeducation.com/vaccine-ingredients-2/sodium-citrate/) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Sodium hydroxide also known as caustic soda or lye, is a highly versatile substance used in a variety of manufacturing processes. Sodium hydroxide is a co-product of chlorine production (https://www.chemicalsafetyfacts.org/sodium-hydroxide/). Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/)

		Cell culture is one of the major techniques in the life sciences. It is the general term used for the removal of cells, tissues or organs from an animal or plant and their subsequent placement into an artificial environment conducive to their survival and/or proliferation. Basic environmental requirements for cells to grow optimally are: controlled temperature, a substrate for cell attachment, and appropriate growth medium and incubator that maintains correct pH and osmolality. The most important and crucial step in cell culture is selecting appropriate growth medium for the in vitro cultivation. A growth medium or culture medium is a liquid or gel designated to support the growth of microorganisms, cells, or small plants. Cell culture media generally comprise an appropriate source of energy and compounds which regulate the cell cycle. A typical culture medium is composed of a complement of amino acids, vitamins, inorganic salts, glucose, and serum as a source of growth factors, hormones, and attachment factors. In addition to nutrients, the medium also helps maintain pH and osmolality (https://www.labome.com/method/Cell-Culture-Media-A-Review.html) Bovine serum albumin is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral vaccine production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angioedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/) Vero cells (DNA from porcine circoviruses 1 and 2 has been detected in RotaTeq). Vero cells are monkey kidney cells that come from African Green monkeys. They are known to contain SV40 (simian virus 40) which is a monkey virus that grows in monkey tissue (particularly kidneys). In two separate studies there were reports of SV40 in non-Hodgkin's lymphoma tumors. The vero epithelial cell line was established in 1962 in Japan. The tissue from which the line was derived, was obtained from the kidney of a healthy adult African green monkey. Vero cells are a lineage of cells used in cell cultures in transfections and vaccine production. Persuasive evidence now indicates that SV40 is causing infections in humans today and represents an emerging pathogen. There is a significant excess risk of SV40 associated with human primary brain cancers, primary bone cancers, malignant mesothelioma, and non-Hodgkin's lymphoma (http://vaxeducation.com/vaccine-ingredients-2/monkey-kidney-cells/)
Rotavirus (Rotarix)	Vero cells, dextran, Dulbecco's Modified Eagle Medium (sodium chloride, potassium chloride, magnesium sulfate,	Vero cells (DNA from porcine circoviruses 1 and 2 has been detected in RotaTeq). Vero cells are monkey kidney cells that come from African Green monkeys. They are known to contain SV40 (simian virus 40) which is a monkey virus that grows in monkey tissue (particularly kidneys). In two separate studies there were reports of SV40 in non-Hodgkin's lymphoma tumors. The vero epithelial cell line was established in 1962 in Japan. The tissue from which the line was derived, was obtained from the kidney of a healthy adult African green monkey. Vero cells are a lineage of cells used in cell cultures in transfections and vaccine production. Persuasive evidence now indicates that SV40 is

	ferric (III) nitrate, sodium phosphate, sodium pyruvate, Dglucose, concentrated vitamin solution, L-cystine, L-tyrosine, amino acids solution, Lglutamine, calcium chloride, sodium hydrogen carbonate, and phenol red), sorbitol, sucrose, calcium carbonate, sterile water, xanthan [Porcine circovirus type 1 (PCV-1) is present in Rotarix. PCV-1 is not known to cause disease in humans.]	causing infections in humans today and represents an emerging pathogen. There is a significant excess risk of SV40 associated with human primary brain cancers, primary bone cancers, malignant mesothelioma, and non-Hodgkin's lymphoma (http://vaxeducation.com/vaccine-ingredients-2/monkey-kidney-cells/) Dextran. It is used in some eye drops as a lubricant and in certain intravenous fluids to solubilize other factors, such as iron. Intravenous solutions with dextran function both as volume expanders and means of parenteral nutrition. Such a solution provides an osmotically neutral fluid that once in the body is digested by cells into glucose and free water. It is occasionally used to replace lost blood in emergency situations, when replacement blood is not available, but must be used with caution as it does not provide necessary electrolytes and can cause hyponatremia or other electrolyte disturbances. It also increases blood sugar levels (https://en.wikipedia.org/wiki/Dextran) Dulbecco's Modified Eagle Medium contains the following: potassium chloride, magnesium sulfate, ferric nitrate, sodium phosphate, sodium pyruvate, D-glucose, concentrated vitamin solution, L-cystine, L-tyrosine, amino acids solution, L-glutamine, calcium chloride, sodium hydrogen carbonate, and phenol red. It is designed to support the growth of microorganisms and cells. Adverse effects include those of individual components of the media, and from pathogens which could contaminate the cultured cell (http://vaxeducation.com/vaccine-ingredients-2/dulbeccos-modified-eagle-medium/) Sorbitol. There is a growing opinion within the medical community that it should be listed as an active ingredient, because too much Sorbitol can cause severe gastro-intestinal problems. Too much sorbitol in cells can cause damage. Sorbitol can also aggravate irritable bowel syndrome and fructose malabsorption (http://vaxeducation.com/vaccine-ingredients-2/sorbitol/) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Calcium carbonate is a chemical compound with the formula CaCO3. It is a common substance found in rocks as the mineral's calcite and aragonite (most notably as limestone, which is a type of sedimentary rock consisting mainly of calcite) and is the main component of pearls and the shells of marine organisms, snails and eggs. Calcium carbonate is the active ingredient in agricultural lime and is created when calcium ions in hard water react with carbonate ions to

		create limescale. It is medicinally used as a calcium supplement or as an antacid, but excessive consumption can be hazardous (https://en.wikipedia.org/wiki/Calcium_carbonate) Sterile water for injection, USP, is sterile, nonpyrogenic, distilled water in a single dose container for intravenous administration adder addition of a suitable solute. It may also be used as a dispensing container for diluent use. No antimicrobial or other substance has been added. The pH is 5.5. The osmolarity is 0 (https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/018632s051lbl.pdf) Xanthan gum is a food thickener made from bacteria that infect numerous plants. It is an ingredient in a wide variety of foods, as well as products such as toothpaste. Though it may offer some health benefits, it is used primarily to change the texture of food, not for any specific health need (https://www.medicalnewstoday.com/articles/320272.php)
Smallpox (Vaccinia) (ACAM2000)	African Green Monkey kidney (Vero) cells, HEPES, 2% human serum albumin, 0.7% sodium chloride USP, 5% Mannitol USP, neomycin, polymyxin B, 50% Glycerin USP, 0.25% phenol USP	Vero cells (DNA from porcine circoviruses 1 and 2 has been detected in RotaTeq). Vero cells are monkey kidney cells that come from African Green monkeys. They are known to contain SV40 (simian virus 40) which is a monkey virus that grows in monkey tissue (particularly kidneys). In two separate studies there were reports of SV40 in non-Hodgkin's lymphoma tumors. The vero epithelial cell line was established in 1962 in Japan. The tissue from which the line was derived, was obtained from the kidney of a healthy adult African green monkey. Vero cells are a lineage of cells used in cell cultures in transfections and vaccine production. Persuasive evidence now indicates that SV40 is causing infections in humans today and represents an emerging pathogen. There is a significant excess risk of SV40 associated with human primary brain cancers, primary bone cancers, malignant mesothelioma, and non-Hodgkin's lymphoma (http://vaxeducation.com/vaccine-ingredients-2/monkey-kidney-cells/) HEPES is a zwitterionic (a neutral molecule with both positive and negative electrical charges) organic chemical buffering agent. HEPES is widely used in cell culture. Potential disadvantages include toxicity (http://vaxeducation.com/vaccine-ingredients-2/hepes/) 2% Human serum albumin is the version of serum albumin found in human blood. It is the most abundant protein in human blood plasma; it constitutes about half of serum protein. It is produced in the liver. In the human body, albumin transports hormones, fatty acids, and other compounds, buffers pH and maintains oncotic pressure, among other functions. It is also used as a preservative and stabilizer to help vaccines remain unchanged. There are concerns about the safety of medical derived from human blood like the Human serum albumin and the risk of viral and prion disease transmission. Side effects include fever, chills, skin rash, vomiting and increased salivation among others (http://vaxeducation.com/vaccine-ingredients-2/human-serum-albumin/)

		.7% Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Mannitol. Chemically, mannitol is an alcohol and a sugar, or a polyol; it is similar to xylitol or sorbitol, and is poorly absorbed by the body. This chemical tends to lose a hydrogen ion in aqueous solutions, which causes the problem of solutions becoming acidic. For this, it is not uncommon to add another substance to adjust the resultant pH imbalance, such as sodium bicarbonate. Mannitol is used in vaccine production for its humectant properties, and very low hygroscopicity. CSPI has petitioned the FDA to require foods containing one or more grams per serving of sorbitol or other sugar alcohol, such as mannitol to carry a more informative notice. CSPI's petition recommends that labels state: "NOTICE: This product contains sorbitol, which may cause diarrhea, bloating and abdominal pain. Not suitable for consumption by children. To protect yourself, start by eating no more than one serving at a time (http://vaxeducation.com/vaccine-ingredients-2/mannitol/) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Polymyxin B. A mixture of polymyxins B1 and B2, obtained from Bacillus polymyxa strains. They are basic polypeptides of about eight amino acids and have cationic detergent action on cell membranes. Polymyxin B is used for infections with gram-negative organisms, but may be neurotoxic and nephrotoxic. Polymyxin B sulfate is an antibiotic, the drug of choice in the treatment of infections of the urinary tract, meninges and bloodstream caused by susceptible strains of Ps. Aeruginosa. Adverse effects include signs of renal damage, it is also neurotoxic. It can cause pain and rash at injection (http://vaxeducation.com/vaccine-ingredients-2/polymyxin-b/) Glycerin. This medication is used as a moisturizer to treat or prevent dry, rough scaly, itchy skin and minor skin irritations. Emollients are substances that soften and moisturize the skin and decrease itching and flaking. Some products are used mostly to protect the skin against irritation. Most emollients can be used safely and effectively with no side effects. However, burning stinging, redness, or irritation may occur (https://www.webmd.com/drugs/2/drug-20275/glycerin-topical/details)

		Phenol red (also known as phenolsulfonphthalein or PSP) is a pH indicator frequently used in cell biology laboratories. The primary used of phenol is in the production of phenolic resins, which are used in the plywood, construction, automotive, and appliance industries. Phenol has anesthetic properties. It is also used in the production of drugs, weed killers, and synthetic resins. Exposure of the skin to concentrated phenol solutions causes chemical burns which may be severe. Phenol was also used as a mean of extermination by the Nazis during the Second World War. Phenol injections were given to thousands of people in concentration camps, especially at Auschwitz-Birkenau (http://vaxeducation.com/vaccine-ingredients-2/phenol/)
Td (Tenivac)	aluminum phosphate, formaldehyde, modified Mueller-Miller casamino acid medium without beef heart infusion, ammonium sulfate, sodium chloride, water	Aluminum phosphate adjuvants are used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas, and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum-containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia, and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Mueller and Miller medium casamino acid medium without beef hear infusion. The basic medium contains: Pancreatic digest (enzymes from the pancreases of an animal) of casein, glucose, cysteine, tyrosine, Mineral salts (Sodium, Magnesium, Phosphate, Potassium) (http://vaxeducation.com/vaccine-ingredients-2/mueller-and-miller-medium-mueller-miller-casamino-acid-medium-without-beef-heart-infusion-modified-mueller-and-miller-medium-modified-muellers-growth-medium-modified-muellers-m/) Ammonium sulfate. EDF Suspected – gastrointestinal or liver toxicant, neurotoxicant, respiratory toxicant. Ammonium sulfate has not been evaluated for carcinogenic potential by the international Agency for Research on Cancer or the U.S. EPA. Ammonium sulfate is registered as a pesticide adjuvant. It is used to facilitate the application of other pesticides and as a synthetic fly attractant. Inhalation of ammonium sulfate for short durations can impair respiratory functionality in asthmatics (http://vaxeducation.com/vaccine-ingredients-2/ammonium-sulfate/)

		Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Water
Td (Mass Biologics)	aluminum phosphate, formaldehyde, thimerosal, modified Mueller's media which contains bovine extracts, ammonium sulfate	Aluminum phosphate adjuvants are used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas, and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum-containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia, and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Thiomersal is a very toxic compound which is harmful inhalation and ingestion. It is a neoplastigen and a teratogen. Thiomersal is also dangerous for the environment. EDF recognized: developmental toxicant. EDF Suspected: Immunotoxicant, kidney toxicant, skin or sense organ toxicant (http://vaxeducation.com/vaccine-ingredients-2/thimerosal/) Mueller and Miller medium. The basic medium contains: Pancreatic digest (enzymes from the pancreases of an animal) of casein, glucose, cysteine, tyrosine, Mineral salts (Sodium, Magnesium, Phosphate, Potassium) (http://vaxeducation.com/vaccine-ingredients-2/mueller-and-miller-medium-mueller-miller-casamino-acid-medium-without-beef-heart-infusion-modified-mueller-and-miller-medium-modified-muellers-growth-medium-modified-muellers-m/) Ammonium sulfate. EDF Suspected – gastrointestinal or liver toxicant, neurotoxicant, respiratory toxicant. Ammonium sulfate has not been evaluated for carcinogenic potential by the international Agency for Research on Cancer or the U.S. EPA. Ammonium sulfate is registered as a pesticide adjuvant. It is used to facilitate the application

		of other pesticides and as a synthetic fly attractant. Inhalation of ammonium sulfate for short durations can impair respiratory functionality in asthmatics (http://vaxeducation.com/vaccine-ingredients-2/ammonium-sulfate/)
Tdap (Adacel)	aluminum phosphate, formaldehyde, 2-phenoxyethanol, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin, glutaraldehyde, modified Mueller-Miller casamino acid medium without beef heart infusion, ammonium sulfate, modified Mueller's growth medium	Aluminum phosphate adjuvants are used in vaccine manufacturing to "stimulate" the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas, and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum-containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia, and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years) (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). 2-Phenoxyethanol. Used as an insect repellent, a topic antiseptic, a solvent for cellulose acetate, dyes, inks and resins, in organic synthesis of plasticizers, in germicides. In vaccines, 2-Phenoxyethanol is an alternative to thimerosal. Classed as "Very Toxic Material." May lead to kidney, liver, blood and central nervous system (CNS) disorders. Harmful or fatal if swallowed. Effects include behavioral disorders, drowsiness, vomiting diarrhea, visual disturbances, thirst, convulsions, cyanosis and rapid heart rate, CNS stimulation, depression, cardiopulmonary effects, kidney disorders. May also lead to liver and blood disorder. Produces reproductive and developmental effects in experimental animals. May cause reproductive defects. Severe eye and skin irritant. Harmful is swallowed, inhaled or absorbed through the skin. One report describes generalized eczema occurring after vaccination where 1-phenoxyethanol was found to be the sensitizing agent (http://vaxeducation.com/vaccine-ingredients/2-phenoxyethanol/) Stainer-Scholte Liquid Medium. A simple chemically defined medium for the production of a specific type of organism (Bordetella Pertussis) for vaccine production. It contains: sodium glutamate, proline, cystine, salts, and growth factors (http://vaxeducation.com/vaccine-ingredients-2/stainer-scholte-liquid-medium-modified-stainer-scholte-liquid-medium/) Casamino acids is a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media. It has all the essential amino acids except tryptophan, which becomes almost destroyed when digested with sulfuric or hydrochloric acid. Casamino acids is similar to tryptone, the latter differing

		by being an incomplete enzymatic hydrolysis with some oligopeptides present, while casamino acids is predominantly free amino acids (https://en.wikipedia.org/wiki/Casamino_acid) Dimethyl-beta-Cyclodextrin are a family of compounds made up of sugar molecules bound together. Cyclodextrins are produced from starch digests of the bacteria Bacillus macerans, by means of enzymatic conversion. They are used in food, pharmaceutical, drug delivery, and chemical industries, as well as agriculture and environmental engineering. Beta cyclodextrins and a number of alkylated cyclodextrins are known to be toxic to the kidneys and disrupt biological membranes (http://vaxeducation.com/vaccine-ingredients-2/dimethyl-beta-cyclodextrin/) Glutaraldehyde is a colorless liquid with a pungent odor used to sterilize medical and dental equipment. It is also used for industrial water treatment and as a chemical preservative. But is toxic, causing severe eye, nose, throat and lung irritation, along with headaches, drowsiness and dizziness. EDF Suspected developmental toxicant, immunotoxicant, reproductive toxicant, skin or sense organ toxicant. On at least 1 federal regulatory list. Poisonous if ingested. Causes birth defects in experimental animals (http://vaxeducation.com/vaccine-ingredients-2/glutaraldehyde/) Mueller and Miller medium. The basic medium contains: Pancreatic digest (enzymes from the pancreases of an animal) of casein, glucose, cysteine, tyrosine, Mineral salts (Sodium, Magnesium, Phosphate, Potassium) (http://vaxeducation.com/vaccine-ingredients-2/mueller-and-miller-medium-mueller-miller-casamino-acid-medium-without-beef-heart-infusion-modified-mueller-and-miller-medium-modified-muellers-growth-medium-modified-muellers-m/) Ammonium sulfate. EDF Suspected – gastrointestinal or liver toxicant, neurotoxicant, respiratory toxicant. Ammonium sulfate has not been evaluated for carcinogenic potential by the international Agency for Research on Cancer or the U.S. EPA. Ammonium sulfate is registered as a pesticide adjuvant. It is used to facilitate the application of other pesticides and as a synthetic fly attractant. Inhalation of ammonium sulfate for short durations can impair respiratory functionality in asthmatics (http://vaxeducation.com/vaccine-ingredients-2/ammonium-sulfate/) Mueller and Miller medium. The basic medium contains: Pancreatic digest (enzymes from the pancreases of an animal) of casein, glucose, cysteine, tyrosine, Mineral salts (Sodium, Magnesium, Phosphate, Potassium) (http://vaxeducation.com/vaccine-ingredients-2/mueller-and-miller-medium-mueller-miller-casamino-acid-medium-without-beef-heart-infusion-modified-mueller-and-miller-medium-modified-muellers-growth-medium-modified-muellers-m/)

Tdap (Boostrix)	modified Latham medium derived from bovine casein, Fenton medium containing a bovine extract, formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide, sodium chloride, polysorbate 80	Modified Latham Medium (derived from bovine casein). Composition of the modified Latham medium: Polypeptone, Bovine heart extract, Glucose, Sodium Chloride, Magnesium sulfate (heptahydrate), Cystine, Calcium pantothenate, Uracil, Nicotinic acid, Thiamine, Riboflavin, Pyridoxine, Biotin, Vitamin B12, Folic acid, Iron (III), chloride (hexahydrate), Iron sulfate (heptahydrate) (http://vaxeducation.com/vaccine-ingredients-2/latham-medium-derived-from-bovine-caseinmodified-latham-medium-derived-from-bovine-casein/) Fenton medium containing and bovine extract – not enough information found. Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Stainer-Scholte Liquid Medium. A simple chemically defined medium for the production of a specific type of organism (Bordetella Pertussis) for vaccine production. It contains: sodium glutamate, proline, cystine, salts, and growth factors (http://vaxeducation.com/vaccine-ingredients-2/stainer-scholte-liquid-medium-modified-stainer-scholte-liquid-medium/) Glutaraldehyde is a colorless liquid with a pungent odor used to sterilize medical and dental equipment. It is also used for industrial water treatment and as a chemical preservative. But is toxic, causing severe eye, nose, throat and lung irritation, along with headaches, drowsiness and dizziness. EDF Suspected developmental toxicant, immunotoxicant, reproductive toxicant, skin or sense organ toxicant. On at least 1 federal regulatory list. Poisonous if ingested. Causes birth defects in experimental animals (http://vaxeducation.com/vaccine-ingredients-2/glutaraldehyde/) Aluminum hydroxide. Aluminum adjuvants are used in vaccine manufacturing to “stimulate” the immune system. The presence of aluminum adjuvants has been associated with injection-site reactions such as nodules, granulomas and erythema. Aluminum adjuvants may lead to the syndrome macrophagic myofascitis, a histological finding where aluminum – containing macrophages infiltrate muscle tissue, and may be accompanied by a clinical syndrome of myalgia, arthralgia and fatigue. A systematic review of controlled safety studies reported that vaccines containing aluminum produce more erythema and induration than other vaccines in young children (up to 18 months of age), and greater local pain in older children (10-18 years). EDF Suspected – cardiovascular or blood toxicant, neurotoxicant, respiratory toxicant. Implicated as a cause of brain damage; suspected factor in Alzheimer’s Disease, dementia

		convulsions and comas. More hazardous than most chemicals in 2 out of 6 ranking systems. On at least federal regulatory lists (http://vaxeducation.com/vaccine-ingredients-2/aluminum-hydroxide/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/)
Typhoid (Typhim Vi)	hexadecyltrimethylammonium bromide, formaldehyde, phenol, polydimethylsiloxane, disodium phosphate, monosodium phosphate, semi-synthetic medium, sodium chloride, sterile water	Hexadecyltrimethyla. Cetrimonium bromide is a quaternary ammonium surfactant. It is one of the components of the topical antiseptic cetrimide. The cetrimonium cation is an effective antiseptic agent against bacteria and fungi. CTAB serves as an important surfactant in the DNA extraction buffer system to remove membrane lipids and promote cell lysis. Toxicity has been found in both animals and humans and it can lead to death (http://vaxeducation.com/vaccine-ingredients-2/hexadecyltrimethylammonium-bromide/) Formaldehyde. Fewer than 20% but perhaps more than 10% of the general population may be susceptible to formaldehyde and may react acutely at any exposure level. More hazardous than most chemicals in 5 out of 12 ranking systems, on at least 8 regulatory lists, ranked as one of the most hazardous compounds (worst 10%) to ecosystems and human health (http://vaxeducation.com/vaccine-ingredients-2/formaldehyde/). Phenol red (also known as phenolsulfonphthalein or PSP) is a pH indicator frequently used in cell biology laboratories. The primary used of phenol is in the production of phenolic resins, which are used in the plywood, construction, automotive, and appliance industries. Phenol has anesthetic properties. It is also used in the production of drugs, weed killers, and synthetic resins. Exposure of the skin to concentrated phenol solutions causes chemical burns which may be severe. Phenol was also used as a mean of extermination by the Nazis during the Second World War. Phenol injections were given to thousands of people in concentration camps, especially at Auschwitz-Birkenau (http://vaxeducation.com/vaccine-ingredients-2/phenol/) Polydimethylsiloxane is more hazardous than most chemicals in 1 ranking system. Ranked as one of the most hazardous compounds (worst 10%) to ecosystems (http://vaxeducation.com/vaccine-ingredients-2/polydimethylsiloxane/)

		Disodium phosphate is used in conjunction with trisodium phosphate in foods and water softening treatment. In foods, it is used to adjust pH. Its presence prevents coagulation in the preparation of condensed milk. Similarly, it is used as an anti-caking additive in powdered products. It is used in desserts and puddings to quicken cooking time, and Jell-O Instant Pudding for thickening. In water, treatment, it retards calcium scale formation. It is also found in some detergents and cleaning agents (https://en.wikipedia.org/wiki/Disodium_phosphate) Monosodium phosphate also known as anhydrous monobasic sodium phosphate and Dibasic sodium phosphate are inorganic compounds of sodium. One of many sodium phosphates, it is a common industrial chemical. Side effects include allergic reaction: itching or hives, swelling in your face or hands, swelling or tingling in your mouth or throat, chest tightness, trouble breathing, blood in your urine, lower back pain, side pain or sharp back pain just below your ribs, confusion, weakness, and muscle twitching, decrease in how much or how often your urinate, dizziness or fainting, dry mouth, increased thirst, muscle cramps, nausea or vomiting, fast, pounding, or uneven heartbeat, red or black stools, seizures, severe stomach pain, nausea, vomiting or bloating (http://vaxeducation.com/vaccine-ingredients-2/monobasic-sodium-phosphate-dibasic-sodium-phosphate/) Semi-synthetic medium is culture medium containing yeast extract as the only non-defined component and glucose, glycerol, Tween 80 and mineral salts (http://vaxeducation.com/vaccine-ingredients-2/semi-synthetic-medium/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Sterile water for injection, USP, is sterile, nonpyrogenic, distilled water in a single dose container for intravenous administration adder addition of a suitable solute. It may also be used as a dispensing container for diluent use. No antimicrobial or other substance has been added. The pH is 5.5. The osmolarity is 0 (https://www.accessdata.fda.gov/drugsatfda_docs/label/2016/018632s051lbl.pdf)
Typhoid (Vivotif Ty21a)	yeast extract, casein, dextrose, galactose, sucrose, ascorbic acid, amino acids, lactose, magnesium stearate. gelatin	Yeast extract. There has been evidence that the ingestion of genetically modified (GMO) yeast may be detrimental to human health. It is not well studied what effects direct injection into the bloodstream may have. But yeast has been implicated to cause anaphylactic reactions, asthma, allergies, death. Yeast strains have proven to be very useful for the expression of proteins. They are used for cell culture and as components of media in vaccine production. There are concerns that yeast extracts or proteins are linked to many autoimmune diseases. These diseases happen when the body's own defense system turns on itself, resulting in life-eroding conditions like rheumatoid arthritis, Crohn's

		disease, inflammatory bowel disease, systemic lupus erythematosus, anti-phospholipid syndrome, multiple sclerosis, diabetes mellitus type 1, and even heart disease (http://vaxeducation.com/vaccine-ingredients-2/yeast-extract/) Casein. Casamino acids are a mixture of amino acids and some very small peptides obtained from acid hydrolysis of casein. It is typically used in microbial growth media (as a culture medium for bacteria). Casein is a protein that is found in milk and used independently in many foods as a binding agent. There are concerns about the negative effects of casein in people with autism, also casein can induce allergic reactions (http://vaxeducation.com/vaccine-ingredients-2/casamino-acids/) Dextrose is the commercial name used for the crystalline glucose produced from starch. Dextrose is used in many baking products, it is also used as a filler where it finds it's used in vaccine production. It can causes severe allergic reactions (rash, hives, itching, difficulty breathing, tightness in the chest, swelling of the mouth, face, lips, or tongue) (http://vaxeducation.com/vaccine-ingredients-2/dextrose/) Galactose is a simple carbohydrate, which in combination with glucose results in lactose. Galactose is found in dairy products, sugar beets, other gums and mucilages. It is also synthesized by the body, where it forms part of the cell components in tissues; and is a by-product from ethanol production process. It is also used as an adjuvant in vaccine production. Adverse effects include pain and stinging at site of injection, dizziness and in exceptional cases allergic reactions (http://vaxeducation.com/vaccine-ingredients-2/galactose/) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Ascorbic acid (vitamin C) is used to prevent or treat low levels of vitamin C in people who do not get enough of the vitamin from their diets. Most people who eat a normal diet do not need extra ascorbic acid. Low levels of vitamin C can result in a condition called scurvy. Scurvy may cause symptoms such as rash, muscle weakness, joint pain, tiredness, or tooth loss (https://www.webmd.com/drugs/2/drug-322/ascorbic-acid-vitamin-c-oral/details) Amino acids are organic compounds that combine to form proteins. Amino acids and proteins are the building blocks of life. When proteins are digested or broken down, amino acids are left. The human body uses acids make proteins to

		help the body: break down food, grow, repair body tissue, perform many other body functions. Amino acids can also be used as a source of energy by the body (https://medlineplus.gov/ency/article/002222.htm) Lactose is a disaccharide sugar composed of galactose and glucose that is found in milk, simply called 'milk sugar.' It is naturally occurring simple carbohydrate or sugar found only in the milk mammals. It is also a by-product in the manufacture of cheese. It is an excipient used in drug and vaccine production. Generalized allergic reactions and hypersensitivity reactions have been reported with lactose (http://vaxeducation.com/vaccine-ingredients-2/lactose/) Magnesium stearate. Because it is widely regarded as harmless in small doses, it is often used as a filling agent in the manufacture of medical tablets and capsules. However, problems of toxicity, absorption and immunosuppression are noted below (http://vaxeducation.com/vaccine-ingredients-2/magnesium-stearate/) Gelatin. A translucent brittle solid substance, colorless or slightly yellow, nearly tasteless and odorless, which is created by prolonged boiling of animal skin, connective tissue or bones, usually of bovine or porcine origin, and is one of many types of stabilizers added to vaccines. Gelatin is responsible for many allergic reactions occurring after vaccination, with symptoms including urticarias, local reactions, and life-threatening anaphylaxis. Recent studies regarding the safety of gelatin in respect to mad cow disease have prompted the U.S. Food and Drug Administration to re-issue a warning and stricter guideline for The Sourcing and Processing of Gelatin to Reduce the Potential Risk Posed by Bovine Spongiform Encephalopathy from 1997. Also, in 2004, the U.S. Food and Drug Administration issued a warning about testicular cancer proliferating from gelatin used in Jell-O, because of a certain method used for a short while to process the collagen through molecular reconstruction. Kraft Foods quickly altered their methods (http://vaxeducation.com/vaccine-ingredients-2/gelatin/)
Varicella (Varivax) Frozen	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed gelatin, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, sodium phosphate monobasic,	MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/)

	potassium phosphate monobasic, potassium chloride, EDTA, neomycin, fetal bovine serum	Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine), and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Potassium phosphate is a generic term for the salts of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness or headache. May also cause bone/joint aches, muscle cramps, stomach cramps, stomach pain, confusion, fast/irregular heartbeat, unusual weakness, tingling/numbness of the hands/feet, and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate/)

		Potassium chloride is used in medicine, scientific applications, and judicial execution through lethal injection. The majority of the potassium chloride produced is used for making fertilizer. Side effects can include gastrointestinal discomfort including nausea and vomiting, diarrhea and bleeding of the gut. Orally it is toxic in excess, high doses can cause cardiac arrest and rapid death. FDA pregnancy category C. This medication may be harmful to an unborn baby. It is not known whether potassium chloride passes into breast milk or if it could harm a nursing baby. Symptoms of potassium chloride overdose may include paralysis, numbness or tingly feeling, uneven heartbeat, feeling light headed, fainting, chest pain or heavy feeling, pain spreading to the arm or shoulder, nausea, sweating, seizures or coma (http://vaxeducation.com/vaccine-ingredients-2/potassium-chloride/) EDTA is a prescription medicine, given by injection into the vein or into the muscle. Intravenous EDTA is used to treat lead poisoning and brain damage caused by lead poisoning; to see how well therapy for suspected lead poisoning is working; to treat poisonings by radioactive materials such as plutonium, thorium, uranium, and strontium; for removing copper in patients with genetic disease called Wilson's disease; and for reducing levels of calcium in people whose levels are too high. EDTA is a chemical that binds and holds on to minerals and metals such as chromium, iron, lead, mercury, copper, aluminum, nickel, zinc, calcium, cobalt, manganese and magnesium. When they are bound, they can't have any effects on the body and they are removed from the body (https://www.webmd.com/vitamins/ai/ingredientmono-1032/edta) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Fetal bovine serum is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angiedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/)
Varicella (Varivax) Refrigerator Stable	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed gelatin,	MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5)

	sodium chloride, monosodium L-glutamate, urea, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, neomycin, bovine calf serum	Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine), and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/) Urea is an organic compound. Urea serves as important role in the metabolism of nitrogen-containing compounds by animals and is the main nitrogen-containing substance in the urine of mammals. It is a colorless, odorless solid, highly soluble in water and practically non-toxic. Dissolved in water, it is neither acidic nor alkaline. The body uses it in many processes, most notably nitrogen excretion. The liver forms it by combining two ammonia molecules with a

		carbon dioxide molecule in the urea cycle. Urea is widely used in fertilizers as a source of nitrogen and is an important raw material for the chemical industry (https://en.wikipedia.org/wiki/Urea) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Potassium phosphate is a generic term for the salts of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness or headache. May also cause bone/joint aches, muscle cramps, stomach cramps, stomach pain, confusion, fast/irregular heartbeat, unusual weakness, tingling/numbness of the hands/feet, and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate/) Potassium chloride is used in medicine, scientific applications, and judicial execution through lethal injection. The majority of the potassium chloride produced is used for making fertilizer. Side effects can include gastrointestinal discomfort including nausea and vomiting, diarrhea and bleeding of the gut. Orally it is toxic in excess, high doses can cause cardiac arrest and rapid death. FDA pregnancy category C. This medication may be harmful to an unborn baby. It is not known whether potassium chloride passes into breast milk or if it could harm a nursing baby. Symptoms of potassium chloride overdose may include paralysis, numbness or tingly feeling, uneven heartbeat, feeling light headed, fainting, chest pain or heavy feeling, pain spreading to the arm or shoulder, nausea, sweating, seizures or coma (http://vaxeducation.com/vaccine-ingredients-2/potassium-chloride/) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Fetal bovine serum is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angiedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/)

Yellow Fever (YF-Vax)	sorbitol, gelatin, sodium chloride, egg protein	Sorbitol. There is a growing opinion within the medical community that it should be listed as an active ingredient, because too much Sorbitol can cause severe gastro-intestinal problems. Too much sorbitol in cells can cause damage. Sorbitol can also aggravate irritable bowel syndrome and fructose malabsorption (http://vaxeducation.com/vaccine-ingredients-2/sorbitol/) Gelatin. A translucent brittle solid substance, colorless or slightly yellow, nearly tasteless and odorless, which is created by prolonged boiling of animal skin, connective tissue or bones, usually of bovine or porcine origin, and is one of many types of stabilizers added to vaccines. Gelatin is responsible for many allergic reactions occurring after vaccination, with symptoms including urticarias, local reactions, and life-threatening anaphylaxis. Recent studies regarding the safety of gelatin in respect to mad cow disease have prompted the U.S. Food and Drug Administration to re-issue a warning and stricter guideline for The Sourcing and Processing of Gelatin to Reduce the Potential Risk Posed by Bovine Spongiform Encephalopathy from 1997. Also, in 2004, the U.S. Food and Drug Administration issued a warning about testicular cancer proliferating from gelatin used in Jell-O, because of a certain method used for a short while to process the collagen through molecular reconstruction. Kraft Foods quickly altered their methods (http://vaxeducation.com/vaccine-ingredients-2/gelatin/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Egg protein. SPF eggs must be used for vaccine production. At 5-6 days incubation, the microorganism is inoculated into the yolk sac of the embryonated eggs, which are harvested after death of the embryo at 12-15 days. Egg-related allergy is common, particularly in children with asthma or general allergies, and may be as high as 40% in children with moderate to severe atopic dermatitis. The risk of egg-related allergy after vaccination depends on the presence of egg protein in the final product. For example, influenza vaccine is manufactured using the extra-embryonic fluids of chick embryos and contains measurable quantities of egg proteins (http://vaxeducation.com/vaccine-ingredients-2/egg-protein/)
Zoster (Shingles) (Zostavax) Frozen	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed porcine gelatin, sodium	MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5)

	chloride, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride; neomycin, bovine calf serum	Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine), and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/) Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/)

		Potassium phosphate is a generic term for the salts of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness or headache. May also cause bone/joint aches, muscle cramps, stomach cramps, stomach pain, confusion, fast/irregular heartbeat, unusual weakness, tingling/numbness of the hands/feet, and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate/) Potassium chloride is used in medicine, scientific applications, and judicial execution through lethal injection. The majority of the potassium chloride produced is used for making fertilizer. Side effects can include gastrointestinal discomfort including nausea and vomiting, diarrhea and bleeding of the gut. Orally it is toxic in excess, high doses can cause cardiac arrest and rapid death. FDA pregnancy category C. This medication may be harmful to an unborn baby. It is not known whether potassium chloride passes into breast milk or if it could harm a nursing baby. Symptoms of potassium chloride overdose may include paralysis, numbness or tingly feeling, uneven heartbeat, feeling light headed, fainting, chest pain or heavy feeling, pain spreading to the arm or shoulder, nausea, sweating, seizures or coma (http://vaxeducation.com/vaccine-ingredients-2/potassium-chloride/) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Fetal bovine serum is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angiedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/)
Zoster (Shingles) (Zostavax) Refrigerator Stable	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed porcine gelatin, urea, sodium chloride, monosodium L-	MRC-5 is a diploid human cell culture line composed of fibroblasts derived from lung tissue of a 14-week-old aborted white male fetus. The cell line was isolated by J.P Jacobs and colleagues in September 1966 from the 7th population doubling of the original strain, and MRC-5 cells themselves are known to reach senescence in around 45 population doublings (https://en.wikipedia.org/wiki/MRC-5) Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of

	glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, neomycin, bovine calf serum	triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Hydrolyzed gelatin refers to enzymatically or chemically processed collagen derived from marine life, though it can also be taken from bovine, ox, pig skin (porcine), and bone. It is water soluble and contains peptides like amino acids. Hydrolyzed gelatin is normally used to benefit nails and skin due to the presence of the amino acids. It is also used to regenerate cells for the body's lean muscle mass, benefit arthritis, and even help the body burn off fat and enhance weight loss. It is used in vaccine production as a stabilizer (http://vaxeducation.com/vaccine-ingredients-2/hydrolyzed-porcine-gelatin-and-hydrolyzed-gelatin/) Urea is an organic compound. Urea serves as important role in the metabolism of nitrogen-containing compounds by animals and is the main nitrogen-containing substance in the urine of mammals. It is a colorless, odorless solid, highly soluble in water and practically non-toxic. Dissolved in water, it is neither acidic nor alkaline. The body uses it in many processes, most notably nitrogen excretion. The liver forms it by combining two ammonia molecules with a carbon dioxide molecule in the urea cycle. Urea is widely used in fertilizers as a source of nitrogen and is an important raw material for the chemical industry (https://en.wikipedia.org/wiki/Urea) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Monosodium glutamate (MSG) is a food additive, popularly marketed as a "flavor enhancer." In its pure form, it appears as a white crystalline powder. In a 1995 report by the Federation of American Societies for Experimental Biology (FASEB) two groups of people were defined as intolerant of MSG – those who eat large quantities of MSG (which is in many processed foods as a flavor enhancer) and those with "severe, poorly controlled asthma." Therefore, sensitivity (intolerance) to MSG is relatively common. There have been numerous studies of allergies and/or sensitivities to MSG, attributed to the free glutamic acid component, which has been blamed for causing a wide variety of physical symptoms such as migraines, nausea, digestive upsets, drowsiness, heart palpitation, hair loss, asthma, anaphylactic shock, rapidly increasing diabetes, and many other complaints…MSG has been used is newborn laboratory mice to induce adult obesity because of the lesions that it provokes in the arcuate nucleus of the hypothalamus (http://vaxeducation.com/vaccine-ingredients-2/monosodium-glutamate-msg/)

		Sodium phosphate is the active ingredient in at least one toilet bowl cleaning tablet, TSP is generally not good for cleaning bathrooms, because it can corrode metal…similar chemicals were once common in laundry and dishwashing detergents, but the phosphate, being a fertilizer, would cause algal blooms in the bodies of water that the drains led to (http://vaxeducation.com/vaccine-ingredients-2/sodium-phosphate/) Potassium phosphate is a generic term for the salts of potassium and phosphate ions and can occur in several forms; monobasic, dibasic and tribasic. They are used as buffers in vaccine production. Side effects include: nausea, vomiting, diarrhea, dizziness or headache. May also cause bone/joint aches, muscle cramps, stomach cramps, stomach pain, confusion, fast/irregular heartbeat, unusual weakness, tingling/numbness of the hands/feet, and change in the amount of urine (http://vaxeducation.com/vaccine-ingredients-2/potassium-phosphate/) Potassium chloride is used in medicine, scientific applications, and judicial execution through lethal injection. The majority of the potassium chloride produced is used for making fertilizer. Side effects can include gastrointestinal discomfort including nausea and vomiting, diarrhea and bleeding of the gut. Orally it is toxic in excess, high doses can cause cardiac arrest and rapid death. FDA pregnancy category C. This medication may be harmful to an unborn baby. It is not known whether potassium chloride passes into breast milk or if it could harm a nursing baby. Symptoms of potassium chloride overdose may include paralysis, numbness or tingly feeling, uneven heartbeat, feeling light headed, fainting, chest pain or heavy feeling, pain spreading to the arm or shoulder, nausea, sweating, seizures or coma (http://vaxeducation.com/vaccine-ingredients-2/potassium-chloride/) Neomycin sulfate is an aminoglycoside antibiotic. It kills sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Neomycin may cause permanent hearing loss, nerve damage, and severe kidney damage. Hearing loss can occur even after the drug is stopped (http://vaxeducation.com/vaccine-ingredients-2/neomycin-sulfate/) Fetal bovine serum is a major component of fetal bovine serum and it is commonly used as a culture medium during vaccine production. Bovine serum is very rich in vitamins, growth factors and other components necessary to grow the cells needed for viral production. Bovine serum albumin is a powerful allergen, able to produce allergic reactions in humans which can manifest as urticaria, anaphylactic shock, bronchospasm, angiedema and serum sickness (http://vaxeducation.com/vaccine-ingredients-2/bovine-serum-bovine-albumin-and-bovine-serum-albumin/)
Zoster (Shingles) (Shingrix)	sucrose, sodium chloride, dioleoyl phosphatidylcholine	Sucrose. As a pure carbohydrate, has a high food energy content and thus can make a diet hypercaloric even in small amounts, contributing to obesity. An experiment with rats that were fed a diet one-third of which was sucrose may serve as a model for the development of the metabolic syndrome. The sucrose first elevated blood levels of

	(DOPC), 3-O-desacl4'monophosphoryl lipid A (MPL), QS-21 (a saponin purified from plant extract Quillaja saponaria Molina), potassium dihydrogen phosphate, cholesterol, sodium dihydrogen phosphate dihydrate, disodium phosphate anhydrous, dipotassium phosphate, polysorbate 80	triglycerides, which induced visceral fat and ultimately resulted in insulin resistance (http://vaxeducation.com/vaccine-ingredients-2/sucrose/) Sodium chloride. This solution is used to supply water and salt to the body. Sodium chloride solution may also be mixed with other medications given by injections into the vein (https://www.webmd.com/drugs/2/drug-145556/sodium-chloride-0-9-intravenous/details) Dioleoylphosphatidylcholine (DOPC) – not enough reliable information 3-O-desacl4'monophosphoryl lipid A (MPL) adjuvant is a chemically modified derivative of lipopolysaccharide that displays greatly reduced toxicity while maintaining most of the ummunostimulatory activity of lipopolysaccharides. MPL adjuvant has been used extensively in clinical trials as a component in prophylactic and therapeutic vaccines targeting infectious disease, cancer and allergies. MPL is a potent simulator of T cell and antibody responses. MPL is the first and only TLR ligand in licensed human vaccines, and in the form of AS04. MPL is licensed in Europe for allergy treatment Pollinex Quattro. MPL adjuvants have been given to thousands of individuals, and are safe, well-tolerated and potent (http://www.violinet.org/vaxjo/vaxjo_detail.php?c_vaxjo_id=24) QS-21 is one of the active fractions of the bark of Chilean tree Quillaja Saponaria, purified using a reverse-phase chromatography (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4874334/) Sodium dihydrogen phosphate dihydrate is a soluble salt of potassium and the dihydrogen phosphate ion which is used as a fertilizer, a food additive and fungicide. It is a source of phosphorous and potassium. It is also a buffering agent. When used in fertilizer mixtures with urea and ammonium phosphates, it minimizes escape of ammonia by keeping the acidity at a relatively low level (https://en.wikipedia.org/wiki/Monopotassium_phosphate) Cholesterol – not enough reliable information related to vaccines Sodium phosphate monobasic dihydrate is a regent with very high buffering capacity widely used in molecular biology, biochemistry and chromatography. Useful in conjunction in Sodium Phosphate in the preparation of biological buffers. Used in many applications including the purification of antibodies. Side effects include: lethargy, hyperpyrexia, diarrhea, carpal spasms, coma, renal acute failure, musosal lesions, aphthous lesions (http://vaxeducation.com/vaccine-ingredients-2/sodium-dihydrogen-phosphate-dihydrate/)

		Disodium phosphate anhydrous is used in conjunction with trisodium phosphate in foods and water softening treatment. In foods, it is used to adjust pH. Its presence prevents coagulation in the preparation of condensed milk. Similarly, it is used as an anti-caking additive in powdered products. It is used in desserts and puddings to quicken cook time and Jell-O Instant Pudding for thickening. In water treatment, it retards calcium scale formation. It is also food in some detergents and cleaning agents (https://en.wikipedia.org/wiki/Disodium_phosphate) Disodium phosphate is used in imitation dairy creamers, dry powder beverages, mineral supplements, and starter cultures. It is used in non-dairy creamers to prevent coagulation. Dipotassium phosphate is also used to make buffer solutions and it is used in the production of trypticase soy agar which is used to make agar plates for culturing bacteria. A 3% gel of dipotassium phosphate is used as the active ingredient in Crest Sensi-Strips, a common tooth sensitivity product (https://en.wikipedia.org/wiki/Dipotassium_phosphate) Polysorbate 80 is a detergent, emulsifier, solubilizer, stabilizer EDF suspected – skin or sense organ toxicant. Known to cause cancer in animals (http://vaxeducation.com/vaccine-ingredients-2/polysorbate-80/)