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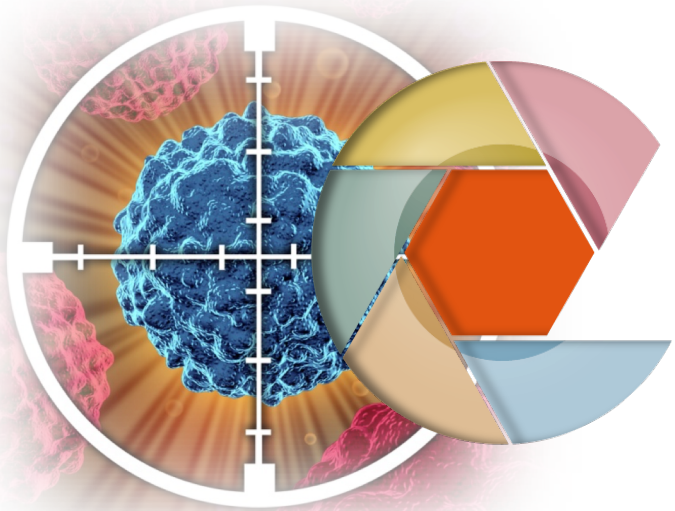

COUNTERPOINT BIOMEDICA

CANCER THERAPEUTICS & DIAGNOSTICS

Proprietary Tumor-Targeting Platforms:

for Pro-Active Delivery of Anti-Cancer Agents, Humanized Antibodies, and Cytokines;

Precision Cancer Diagnostics:

For Capture and Characterization of Circulating Tumor Cells

Updated March 14, 2024

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The Company:

Counterpoint Biomedica LLC is a preclinical stage biopharmaceutical company engaged in Research, Development, and Commercialization of high-value tumor-targeted oncology products. The mission of the company is to enhance the performance of the most widely-used FDA-approved **Chemotherapeutic and Biological Agents** by the addition of *ProActive Tumor Targeting*, and to apply these proven platform technologies to **Cancer Diagnostics and Liquid Biopsies**. Founded by two board-certified oncologists and an award-winning scientist from The University of Southern California School of Medicine, Counterpoint Biomedica LLC either owns outright or has gained exclusive patent rights to develop these proprietary tumor-targeting platforms for a wide variety of clinical applications.

Focused sharply on oncology products, the company has developed an extensive and complementary pipeline that creates significant opportunities in terms of combination therapies with the added advantages of targeted drug delivery. The addition of active tumor targeting to FDA-approved drugs results in a significant reduction in clinical development costs and timeline, while providing a significant commercial edge in future drug pricing. Moreover, the addition of active tumor targeting enables the approved anticancer agents to perform with even greater therapeutic efficacy, at lower drug doses, with less toxicity in the clinic.

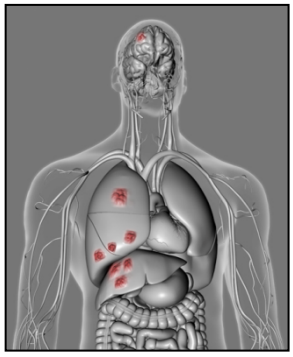
Expertise in Tumor-Targeted Drug Delivery:

Credited with the creation and clinical development of the first targeted, injectable gene delivery vehicle to be validated in clinical trials[1,2] — using an active drug delivery platform referred to as **Pathotropic** (*disease-seeking*) **Targeting**[3] and/or **XC-**(*exposed collagen*) **Targeting**[4] — the founders of Counterpoint Biomedica LLC have adaptively engineered this powerful, proven biotechnology platform for the improvement of conventional cancer therapeutics and the emerging field of targeted diagnostics.

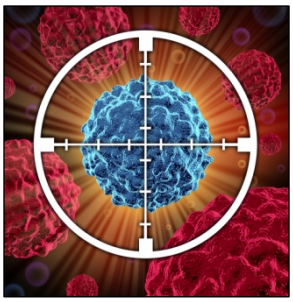
1. Waehler et al., 2007, *Nature Reviews / Genetics,* 8:573-587.
2. Gordon and Hall, 2010, *Expert Opin. Biol. Ther.*, 10:819-832.
3. Ruoslahti et al., 2010, *Journal Cell Biol: Review*, 188:759-768.
4. Chawla et al., 2016, *Sarcoma Research Int'l*, 3:1-7, id1024.

Executive Summary:

Counterpoint Biomedica LLC has adapted a proven Tumor-Targeting Platform to enable the major FDA-approved chemotherapies and biologic therapies to work more efficiently by providing an **"Active" mode of drug delivery, without altering the drug itself**. This is accomplished by tumor-targeted adaptor proteins (called onco-aptamers). When added to the final drug formulation, onco-aptamers bind tightly to the respective cancer drug and then guide the drug-aptamer complexes through the general circulation to primary and metastatic lesions by seeking out abnormal XC-proteins that are exposed in all cancerous tissues. Through this mechanism, onco-aptamers increase the effective local concentration of the drug within the tumors, thereby enhancing the cancer drug's Safety and Efficacy while lessening unwanted side effects—enabling lower drug doses to be more effective.



This enabling platform is also aimed at targeting GM-CSF, **a potent immunostimulatory cytokine, to cancerous lesions**—in order to enhance humoral and cell-mediated immune responses by means of a personalized vaccination strategy. Unlike cumbersome *Transduced Cancer-Cell Vaccines*, whereby cancers cells are genetically modified by viral vectors to secrete GM-CSF, in an effort to generate anti-tumor effects, the elaboration of tumor targeting directly to the cytokine, as a biological gain-of-function, now enables cytokine delivery to lesions upon simple intravenous infusion. Counterpoint Biomedica successfully applied genetic engineering and advanced protein expression technologies to produce a GM-CSF / vWF fusion protein that provides lesion-targeted delivery of GM-CSF to tumors.



Additionally, the enabling platform biotechnology is aimed at improving Cancer Diagnostics and Liquid Biopsies with the engineering of specific antibodies and polypeptide targeting aptamers: synthetic polypeptide constructs designed to recognize abnormal pericellular collagens and/or vimentin proteins arrayed on the surfaces of circulating tumor cells (CTCs) of mesodermal origin (e.g., sarcomas), as well as epithelioid CTCs that have undergone the classical Epithelial-to-Mesenchymal Transition (EMT). These **Targeted Diagnostic Reagents** may be used clinically for differential diagnosis, patient monitoring, or targeted cancer therapy.

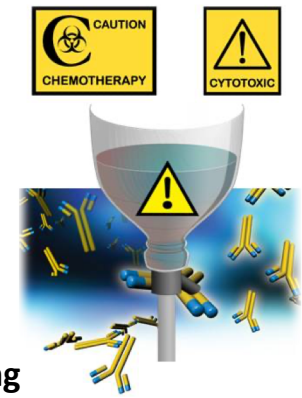
The Clinical Problem and the Counterpoint Solution:

Selective Tumor-Targeting, an Unmet Medical Need

The inherent toxicity of many FDA-approved biologic and chemotherapeutic agents is a result of the non-specific nature of the drug biodistribution, which can damage normal organs and proliferative tissues of the body. More-selective forms of tumor targeting would result in **Greater Efficacy with Less Toxicity**, as the biologic and chemotherapeutic agents would be more efficiently sequestered into tumor compartments, thus sparing the normal cells and tissues of the untoward toxicities of high systemic concentrations. More efficient tumor targeting would enable lower-doses of the anticancer agents to be administered with greater clinical impact, thereby raising the **Therapeutic Index** and improving the overall performance of the most widely used FDA-approved anti-cancer agents.

The Clinical Problem: Systemic Biodistribution and Dose-Limiting Toxicities

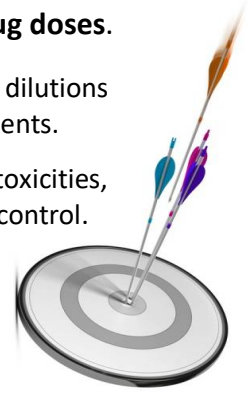
The inherent toxicities of approved chemotherapeutic and biologic agents are a result of ungoverned / non-specific drug biodistribution, which damages normal tissues and organs. This inefficiency requires larger doses to ensure sufficient uptake of the drugs.



- **Passively Drug Delivery** is very inefficient, requiring high plasma levels to be effective, which also kills normal cells resulting in systemic toxicities.
- The Majority **(>95%)** of passively administered cancer agents are known to accumulate in non-target organs—liver, spleen, lungs.
- Monoclonal antibodies (mAbs) are considered to be safer than small molecules, but this is not the case with Immune Checkpoint Inhibitors.

The Clinical Solution: "Active" and Efficient Tumor Targeting

"Active" Tumor Targeting delivers pharmaceutical agents more efficiently to diseased tissues—specifically to invasive cancers—effectively raising the local concentration of the anti-cancer agent within tumors, and improving the Therapeutic Index. Targeting the exposed collagenous proteins (**XC-proteins**) of the abnormal tumor microenvironment—**a pathologic characteristic of all invasive cancers**—represents an active means of targeting therapeutic agents selectively to tumors. Targeting anticancer agents to the tumor XC-proteins present in all invasive cancers has many clinical advantages: **Higher effective local concentrations at lower drug doses**.

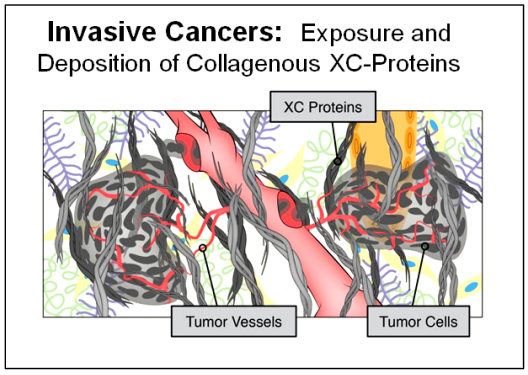


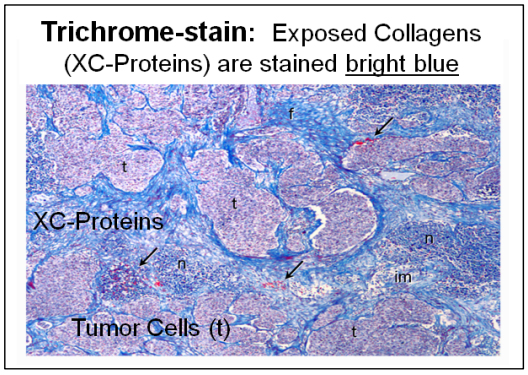
- **Active Drug Delivery** is orders of magnitude more efficient, overcoming vast dilutions in the circulation while seeking-out and accumulating-in the tumor compartments.
- **Lower Drug Doses** reduce the issues of dose-limiting and treatment-limiting toxicities, enhancing the treatment duration, immune responses, and ultimately tumor control.
- **Active ECM Targeting overcomes the problems of heterogeneity of tumors** by focusing on a common histopathological feature of all invasive cancers.

The Science: Targeting the Tumor Microenvironment

Neoplastic lesions are not only composed of malignant cancer cells but also stromal components including fibroblasts, endothelial cells, and inflammatory cells, by which an opportunistic **tumor microenvironment (TME)** is formed, which promotes tumorigenesis, progression, and metastasis. Although cancer drug development traditionally focused on targeting the cancer cell cycle, emphasis has recently shifted toward the TME for novel therapeutic and prevention strategies. Today, more and more therapeutic strategies are purposefully designed to target the TME, as well as the unique properties of the cancer cells. The biochemical processes of **tumor invasion**, **metastasis**, **angiogenesis**, and reactive **stroma formation** characteristically result in a disruption of the normal histology and the pathologic Exposure of Collagenous Proteins (XC-proteins) of the Extracellular Matrix (ECM). **Thus, Exposure of XC-Proteins is a "Targetable" Histopathologic Property of all Neoplastic Lesions.**

Tumor XC-Proteins: A Pathologic Feature of the Tumor Microenvironment





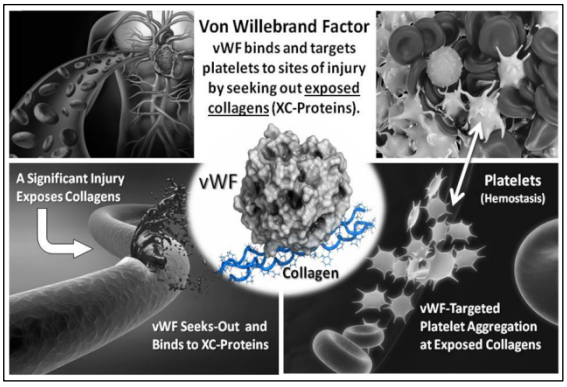
Abnormal XC-Proteins of the Tumor Microenvironment: In normal, uninjured tissues collagenous proteins are not exposed to the general circulation. In contrast, the biochemical processes of tumor invasion, neoangiogenesis, and reactive connective tissue formation exposes and deposits collagenous **XC-proteins—a characteristic histopathology of all invasive cancers**—which can be used to therapeutic advantage by targeting therapeutic agents to this characteristic property of the diseased tissues (**Right Panel**: **f**, fibrosis; **n**, necrosis; **im**, immune infiltrate, **t**, tumor cells; **arrows** indicate tumor angiogenesis).

Tumor Targeting: Utilizing a Physiological Surveillance Function within vWF

von Willebrand Factor (vWF) is an important "targeting" protein involved in normal blood clotting:

Molecular Engineering the XC-Binding Domain from vWF Provides the Basis for Targeted Drug Delivery:

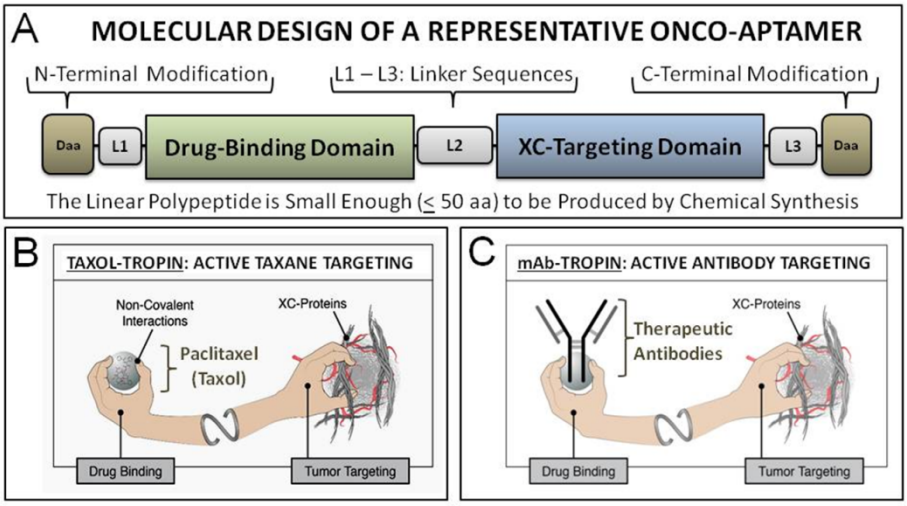
- **"Smart" (targeted) platelets**: vWF naturally guides circulating platelets to injured or diseased tissues by seeking out XC-proteins present in the ECM—a very rapid, efficient and high-affinity process.
- **An Enabling Technology:** Adapting a high-affinity XC-binding motif derived from vWF enables the targeted delivery of therapeutic agents to injured or diseased tissues and cancerous lesions.



The Counterpoint Approach: Tumor Targeting Onco-Aptamers

The Tumor Targeting Platform: An XC-binding motif derived from vWF has been incorporated by molecular engineering into a versatile Drug Delivery Platform: providing a new series of bifunctional polypeptide Onco-Aptamers, designed to provide "active" delivery of cancer drugs.

Targeting Onco-Aptamers Designed to Improve Drug Delivery



The Core Design Elements of the Tumor-Targeting Platform:

1. **An XC-Binding Domain** for tumor targeting is common to all Onco-Aptamers.
2. **A Drug-Binding Domain** for non-covalent interactions with Specific Cargos.
3. The Therapeutic Agent: Small Molecules (**B**), Monoclonal Antibodies (**C**).
4. N-Terminal and C-Terminal Modifications (**A**) enhance stability and function *in vivo*.

Note: the anticancer agent (i.e. the Cargo) is essentially unmodified and is bound by non-covalent interactions to the bifunctional tumor-targeting Onco-aptamer.

Advantages of Counterpoint Biomedica's "Active" Tumor Targeting:

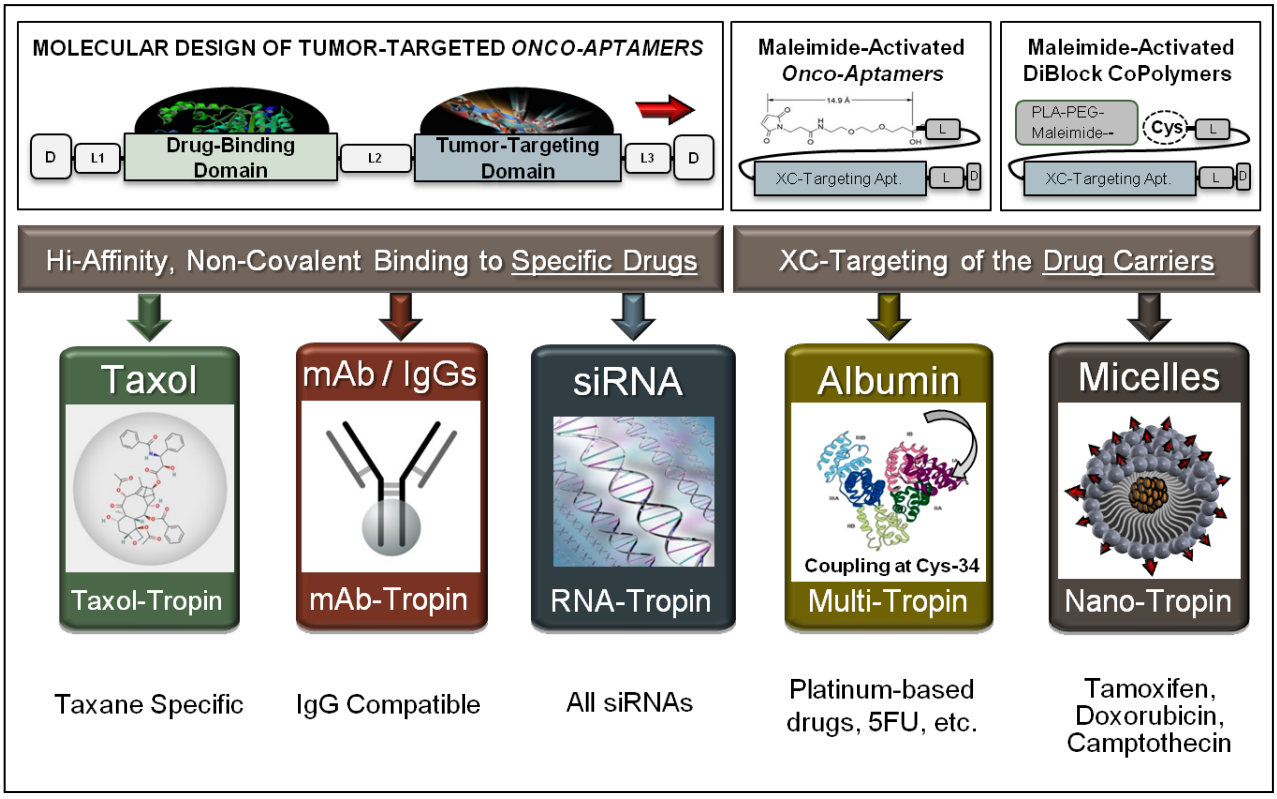
Biochemical and histological characteristics of the tumor microenvironment make it possible to design drug delivery systems that specifically target anti-cancer agents to tumors. Without specific targeting, conventional anti-cancer agents rely largely on passive transport—i.e., on meager enhanced permeability and retention (EPR) effects—have poor pharmacokinetic profiles, and are distributed non-specifically in the body, leading to systemic toxicity associated with serious side effects. **Counterpoint's Active Tumor Targeting Platform** overcomes the problem of ungoverned drug distribution, enabling lower doses of the approved drugs to be used over longer periods of time. This results in increased clinical efficacy with decreased systemic toxicity and improved tumor control. Counterpoint's Tumor Targeting platform overcomes the diversity of tumor types—by targeting a feature common to all neoplasia—enabling **lower doses of the approved drugs to be used systemically, while increasing clinical efficacy**. Moreover, higher effective drug levels within the tumors may overcome some aspects of clinical drug resistance, resulting in a more complete elimination of chemo-sensitive cells, thereby converting partial responses into complete responses.

Product Pipeline: A Versatile Tumor-Targeting Platform

Counterpoint Biomedica, LLC has developed a series of drug-specific Onco-Aptamers, each of which are designed to bind with high affinity to a distinctive class of biologic or chemotherapeutic agents. Onco-Aptamers selective for monoclonal antibodies (**mAb-Tropins**) have been validated in vitro and in vivo. Preclinical studies demonstrated that mAb-Tropins bind tightly to monoclonal antibodies (e.g., *Avastin*) and to XC-proteins with full retention of mAb bioactivity. Currently, mAb-Tropin-277 has been selected for expedited clinical development. Targeting Paclitaxel (**Taxol-Tropins**) to solid tumors was demonstrated *in vitro* and *in vivo*, with demonstrations of low-dose efficacy, revealing a proof-of-concept for a safer and more effective chemotherapy is also available for clinical development. Targeted (cell penetrating) aptamers for siRNA oligonucleoties (**RNA-Tropins**) have also been validated. **Multi-Tropins**, i.e., tumor-targeted Albumin complexes, which bind tightly to Platinum drugs, while retaining their full bioactivity, represent a new clinical opportunity. Finally, the feasibility of targeting of Drug-loaded polymeric micelles (**Nano-Tropins**) was demonstrated by chemically attaching a tumor-targeting polypeptide to the external surface (corona) of a diblock polymeric micelle containing a fluorescent marker drug, thus demonstrating the feasibility of tumor-targeted drug delivery.

Tumor-Targeted Oncology Products:

Each Onco-Aptamer is Selective for a Distinct Class of Cancer Drugs



Pro-Active Targeting of Monoclonal Antibodies:

Long-Term Goal: Targeting the Blockbuster Immune Checkpoint Inhibitors

Immune Checkpoint Inhibitors are designed to break immune tolerance and enhance immune responses to refractory tumors by inhibiting T-cell checkpoints such as PD-1, PD-L1 and CTLA-4. Recent clinical studies of Immune Checkpoint Inhibitors have reported durable antitumor responses in a variety of tumor types including melanoma, renal cell carcinoma, head and neck cancer, bladder cancer, and lung cancer. Registration of combination therapies with synergistic treatment modalities as well as multiple Checkpoint Inhibitors for additional indications is highly anticipated in the near future; yet serious adverse events are looming on the horizon.

Despite the important clinical benefits, Immune Checkpoint Inhibitors are associated with a unique spectrum of untoward side effects, including drug-induced inflammatory disorders and autoimmune-like toxicities resulting from systemic immunologic activation in normal non-cancerous tissues and organs. Such immune-related adverse events (irAEs) can affect multiple organs such as skin, bowel, kidney, peripheral and central nervous system, liver, lymph nodes, eyes, pancreas, and endocrine tissues. Their presentation can range from mild and manageable, to severe and life threatening if not **"prevented pro-actively"** (as shown herein) and/or recognized early-on and treated with appropriate immunosuppressive counter-measures.

Counterpoint Biomedica has developed an **"active" tumor-targeting platform** that delivers monoclonal antibody-based therapies (mAbs) more efficiently to tumors, without altering either the chemical structure or the bio-manufacturing the approved therapeutic antibodies. The Counterpoint approach utilizes a proprietary bifunctional Onco-Aptamer technology that **(i)** binds a cognate mAb, including Checkpoint Inhibitors, (tightly yet non-covalently) and **(ii)** actively seeks out and accumulates in cancerous tissues, thus enabling significantly lower doses of the therapeutic antibodies to be used with greater clinical effect and with less systemic toxicities—improved safety & efficacy! In view of the widespread potential and risks associated with Immune Checkpoint Inhibitors, it is anticipated that the clinical utility and therapeutic index of this class of mAbs, in particular, could be vastly improved by a more efficient means of targeting and compartmentalizing the therapeutic drug/mAb delivery specifically to tumors.

Near-Term Goal / Trials: Targeting Simple EGFR-blocking Antibodies

Strategic clinical development, **of mAb-Tropin-277, the lead clinical product**, is aimed at a clear, straightforward, and expedient clinical demonstration of proactive mAb-targeting by focusing first on EGF-receptor blocking antibodies—which are currently limited in clinical utility by severe side effects involving normal tissues and organs; but which lack the plethora of complexities involving the unrestrained immune system, as is found with checkpoint inhibitors.
Upon simple mixing, prior to intravenous infusion, mAb-Tropin-277 binds tightly to the Fc-region of the EGFR-blocking antibodies, without interfering with subsequent bioactivity. The mAb-Tropins pro-actively pilot the tethered EGFR mAbs to the tumor microenvironment, thereby restricting biodistribution and compartmentalizing the blocking effects within tumors.

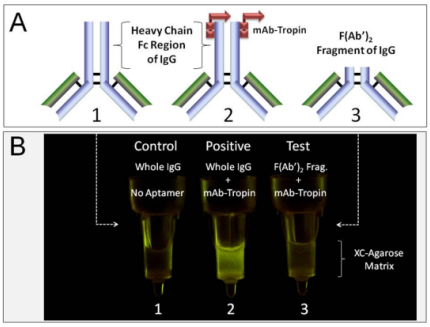
Preclinical Validation of mAb-Targeting: mAb-Tropins

mAb-Tropins Bind the Fc Region of IgGs:

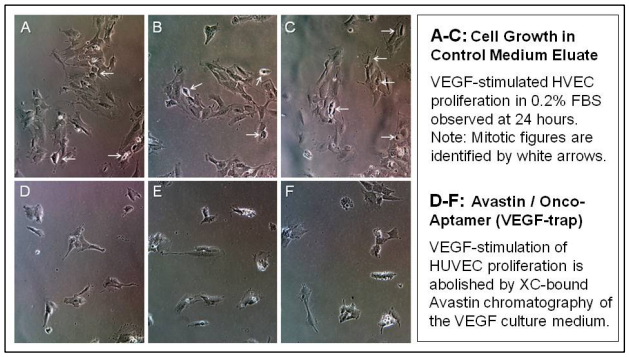
Binding Studies Localize the Fc Attachment Site:

- FITC-labeled IgGs vs F(Ab')$_2$ fragments confirm the mAb-Tropin binding sites are in the Fc region of the IgG molecule.
- The deduced Fc binding site is far removed from IgG antigen-binding domains and the receptor-mediated antibody functions.

Binding of Whole IgGs vs F(Ab')2 Fragments



Aptamer/Avastin Complexes are Bioactive (as a VEGF-Trap): Using XC-bound Aptamer / Avastin complexes and column chromatography (of VEGF-containing culture medium) to deplete the VEGF and prevent the VEGF-dependent proliferation of Human Vascular Endothelial Cells (HVEC) in cell culture.

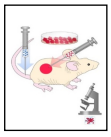


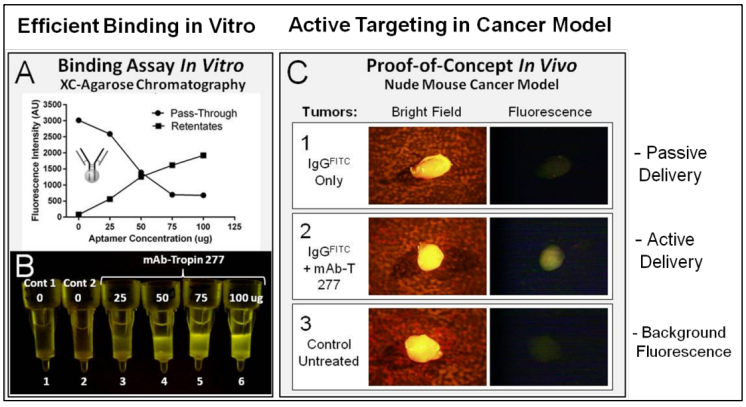
- XC-Column bound Aptamer / Avastin complexes were used as a VEGF-Trap to deplete the growth factor from VEGF-supplemented culture medium, thereby preventing VEGF-dependent stimulation of HVEC proliferation, as is shown in cell culture.
- The VEGF-stimulation of HUVEC cells (**A-C**) seen at 24 hours is prevented by passage of VEGF-medium through the XC-column (**D-F**).

mAb-Tropin-277: XC-Binding & Tumor-Targeted Delivery of Fluorescent-IgGs

Binding Studies (**A, B**) *in vitro* show mAb-Tropin-dependent binding of FITC-IgGs.

Animal Studies (**C**) demonstrate active tumor targeting vs passive targeting in mice.



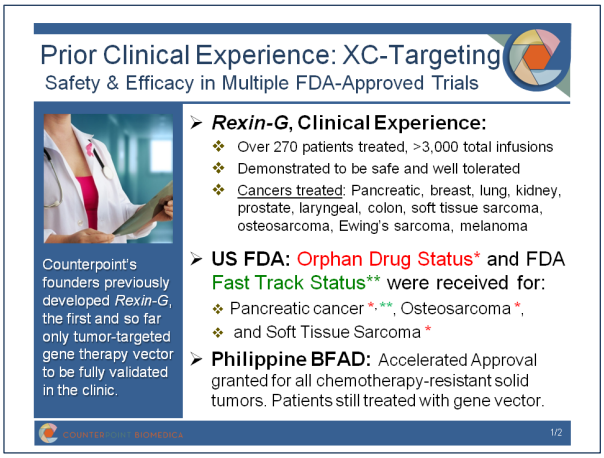


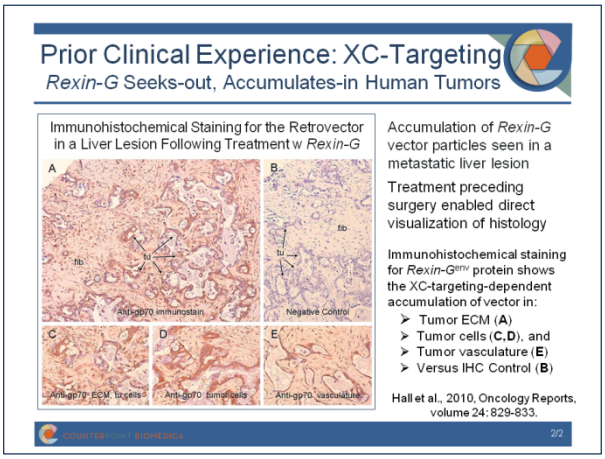
- C1. Little accumulation of the FITC-IgGs were seen in tumors of mice treated with IgGs alone (i.e., passive biodistribution).
- C2. The tumors of IgG + Aptamer treated mice showed significant accumulation of fluorescent IgGs in tumors.
- C3. The tumors of Control, Untreated mice demonstrate the relatively low level of background (auto) fluorescence.

A classic murine xenograft model of metastatic cancer: subcutaneous tumors composed of human (MIA PaCa-2) pancreatic cancer cells. Experimental solutions were injected into the tail veins, T=60 min.

Clinical Validation of XC-Targeting: Past and Present

Prior to founding Counterpoint Biomedica LLC, this team of physicians and scientists developed the first, and so-far only, tumor-targeted gene medicine to be fully validated in the clinic (see Whaeler et al., 2007, *Nature Reviews, Genetics*, 8: 573-587). Determined to be safe and well-tolerated, with compelling demonstrations of single-agent-efficacy and broad-spectrum clinical utility, the performance of the **enabling Tumor-Targeting Platform**, as shown in human tumors, is now extended to conventional therapeutics and biologics, including monoclonal antibodies.

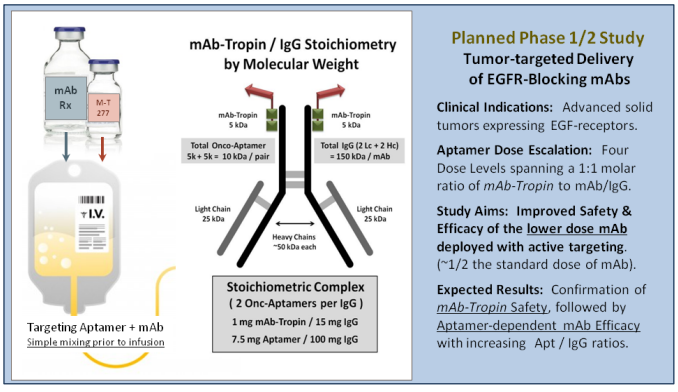




mAb-Tropin-277: Slated / Ready for Clinical Development

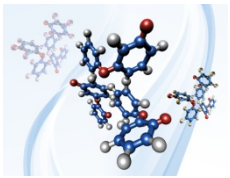
Pro-Active" Targeting of EGF-Receptor Blocking mAbs with mAb-Tropin-277:

Based on prior clinical experience with this enabling targeting platform in US and worldwide clinical trials—demonstrating general safety, targeting efficacy, absence of immunogenicity—using the same basic XC-collagen-binding polypeptides displayed on the envelopes of retroviral vectors, taken together with the safety and functionality of mAb-Tropin-277, as demonstrated in preclinical studies and *in vivo* in a subcutaneous human xenograft model of metastatic cancer in nude mice; clinical grade mAb-Tropin-277 has been chemically synthesized in approved GMP facilities and purified to >95% purity, followed by QC/QA characterization in terms of sequence identity, formulation, sterility, stability, IgG-binding, and XC-binding activity in preparation for Phase 1/2 clinical studies using a mAb-Tropin-277 in combination with an EGFR-blocking mAb.



Planned Clinical Study: "A Phase 1/2 Evaluation of Safety and Efficacy of Tumor-Targeted Panitumumab/mAb-Tropin-277 as Treatment for Chemotherapy Resistant Solid Tumors Expressing EGFR."

Note: the EGFR-blocking mAb is administered at a lowered doses (1/2 of normal), while the dose of the mAb-Tropin-277 aptamer (thus the degree of tumor targeting) is gradually increased, in a series of defined steps.



ProActive Targeting of *Paclitaxel* (aka, Taxol):

Taxane-based Cancer Chemotherapy

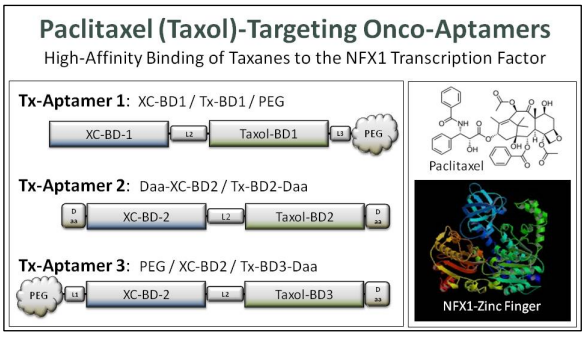
Clinical Utility: The taxanes are among the most widely used and effective antineoplastic agents derived from natural sources. The prototypical taxane, paclitaxel (known as Taxol), was discovered as part of a National Cancer Institute initiative wherein the extracts of thousands of plants were screened for anticancer activity. The taxanes inhibit cell proliferation by binding to microtubules, inducing a sustained mitotic block—associated with an incomplete metaphase plate and an abnormal organization of the spindle apparatus—which leads to apoptosis and cell death. Exhibiting both cytotoxic and antiangiogenic properties, Taxol has a wide spectrum of antitumor activity, particularly against ovarian cancer, breast cancer, non-small cell lung cancer, head and neck tumors, Kaposi's sarcoma, pancreatic cancer, and urologic malignancies.

Systemic Toxicity: In spite of the remarkable prospects of paclitaxel as a cancer drug, there remains the problem of dose-limiting and treatment-limiting toxicity. Side effects are common for >30% of patients taking Taxol: including low blood counts; hair loss; arthralgias and myalgias; hand-foot-syndrome; peripheral neuropathy; nausea and vomiting, diarrhea, ulcerative mouth sores, and hair loss.

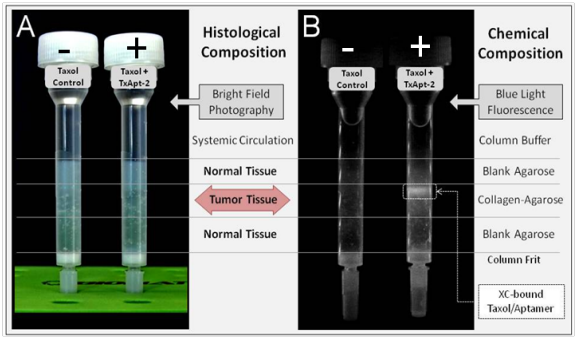
Active Delivery vs Passive EPR Effects: The introduction of Nab-paclitaxel (albumin-bound paclitaxel, *Abraxane*, Celgene) served to eliminate the problems associated with the original camphor-based solvents and to improve the dose-limiting toxicities and biodistribution of paclitaxel to some extent. This is due in part to the "Enhanced Permeation and Retention" (**EPR effect**) of tumor vasculature that is common to hormones, nutrients, and drugs that are carried naturally by human serum albumin. **However, such Passive Delivery Systems—based on drug accumulation in the areas around the tumors with leaky vasculature—is inefficient:** the majority (>95%) of administered nanoparticles are known to accumulate in other organs, in particular the liver, spleen, and lungs. Clearly, the active and selective delivery of taxanes to tumors would enable lower (not higher) doses of taxol/paclitaxel to become more clinically effective with less toxicity.

The Taxol-Tropins—Tumor-Targeted Taxane-Binding Aptamers:

Counterpoint Biomedica has developed a novel tumor-targeting platform to deliver *Paclitaxel* (Taxol), more efficiently to tumors, without altering the chemical structure or manufacturing of *Paclitaxel*.



Design Engineering and Selection of Taxol-Tropins

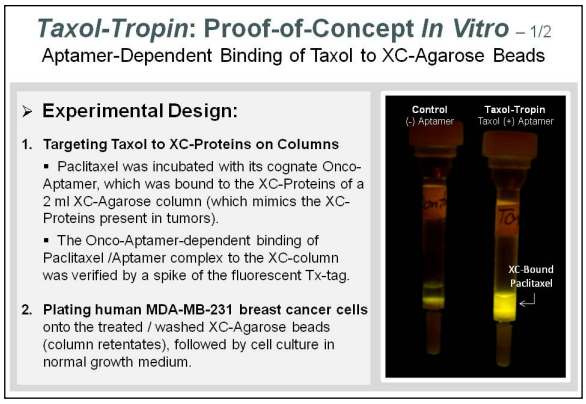


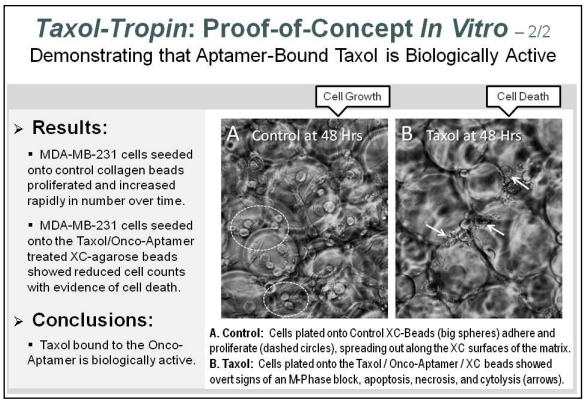
Aptamer-dependent binding of Taxol to XC-Proteins

XC-Agarose Affinity Chromatography: High-affinity binding of a Taxol-Tropin onco-aptamer to the Fluorescent Cargo (Taxol*) and to XC-Proteins is demonstrated in this in vitro simulation of tumor targeting (**A**, bright field), using layers of blank-agarose & collagen-agarose (as tissues). The aptamer-dependent band of fluorescence (**B, arrow**) demonstrates/simulates tumor-targeted drug delivery.

Taxol-Tropins—XC-bound Taxol Complexes are Biologically Active:

Proof-of-Concept *In Vitro:* Taxol-Aptamer complexes bound to the XC-agarose beads were cultured with MDA-MB-231 human breast cancer cells, resulting in an overt mitotic blockade followed by apoptosis and cell death (versus cells plated on control beads). These demonstrations of cytotoxicity confirm that the Paclitaxel / Aptamer / XC-Protein complexes retain characteristic cytocidal bioactivity.

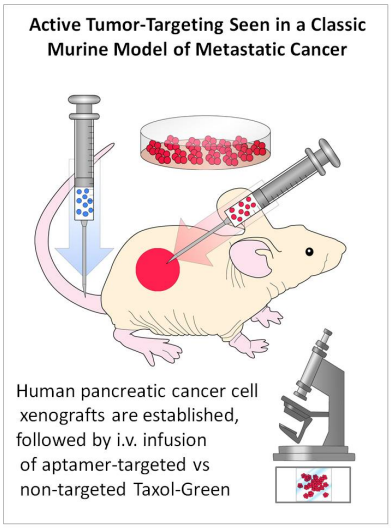




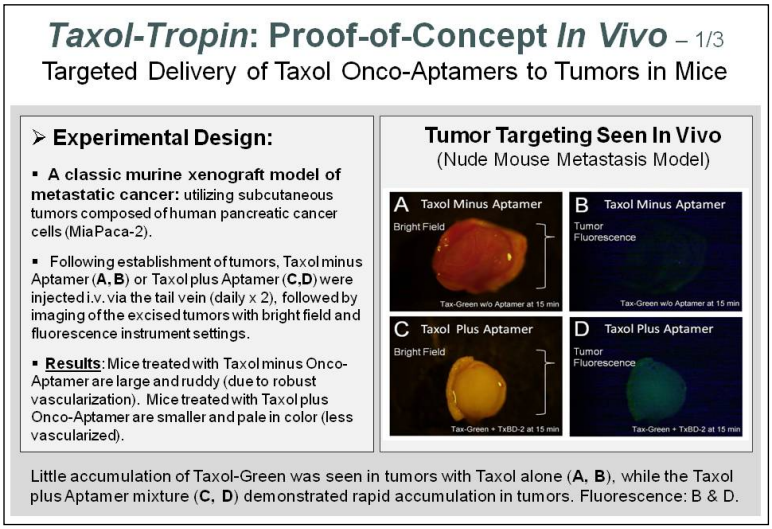
Taxol-Tropins—Tumor Targeting Demonstrated In Vivo:

Proof-of-Concept *In Vivo:* Boluses of Taxol (Oregon Green-paclitaxel), either alone or as Taxol-Aptamer complexes (Tx-Apt 2), were injected into tail veins of athymic nude mice bearing human pancreatic cancer (MiaPaca-2) cell xenografts. Within 15 minutes of i.v. infusion, the accumulation of Taxol-Aptamer complexes within the tumors is evident, compared to non-targeted Taxol (shown below). After 24 hours, striking differences in the vascularization of the targeted vs non-targeted Taxol groups suggested preclinical efficacy at an exceedingly low dose (1:50th the normal effective dose in mice).

Tumor-Targeting In Vivo



Fluorescence Imaging Validates Active Targeting

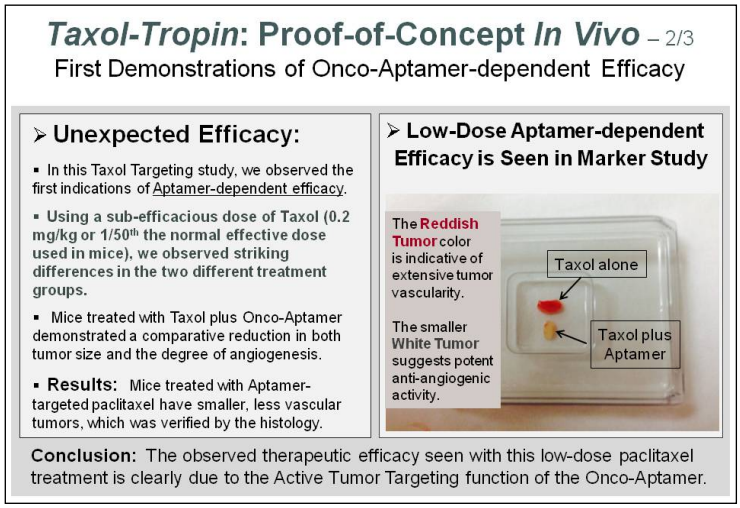


Direct Comparison of Passive (EPR only) **vs Active Tumor-Targeting of Taxol is Compelling!**

Taxol-Tropins—First Demonstrations of Low-Dose Efficacy:

Remarkable Aptamar-Dependent Efficacy Seen In Vivo in this Marker Study

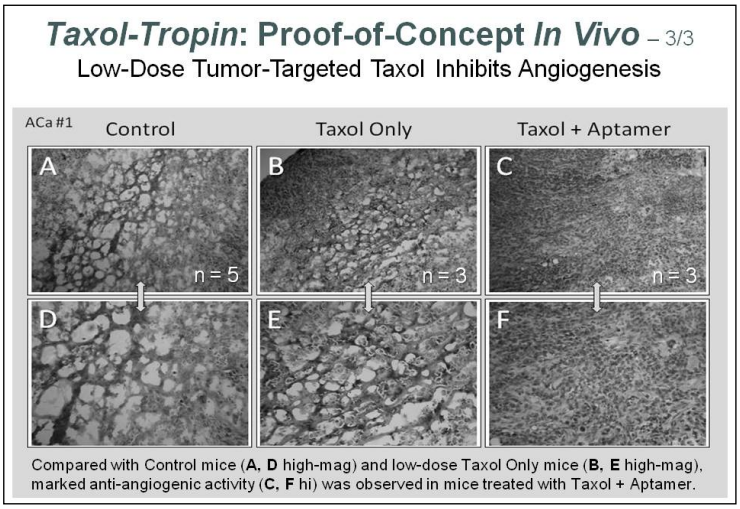
Visual examination of the Taxol plus Aptamer group versus the Taxol Alone (sans Aptamer) after 24 hours revealed overt differences in the vascularization of the targeted vs non-targeted Taxol groups, indicative of preclinical efficacy at an exceedingly low dose (Note: The dose of Taxol used in this marker study were 1:50th the normal effective dose in mice).



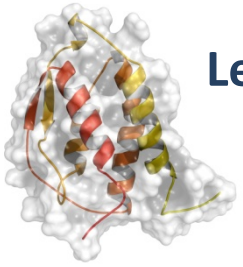
➢ **Antiangiogenic Effects:** While the doses of Taxol-Green used in this simple marker study were 1/50th the standard effective dose of Taxol normally used in mice, the effects of the aptamer-dependent tumor-targeting were profound: clear evidence of anti-angiogenesis is seen in the Aptamer-Targeted groups in direct comparison to the Taxol-alone groups, where the same doses of taxol were administered to the **tumor-bearing mice.**

Comparative Histology Confirms Aptamer-Dependent Anti-Angiogenic Activity at a Low-Dose (1/50th the normal dose) at which Non-Targeted Taxol is Ineffective:

Since anti-angiogenic effects are commonly reported in clinical studies of low, metronomic doses of Taxol, we examined the comparative histology of the untreated (Control) groups, the Non-Targeted Taxol (Taxol only) groups, and the Aptamer-Targeted (Taxol + Aptamer) groups.



➢ **Histological Examination** of the excised tumors confirmed that both Control tumors (**A,D enlarged**) and Non-Targeted Taxol group (**B,E enlarged**) were highly vascularized, while the vascularity of the Targeted-Taxol group (**C,F**) were greatly reduced. This classic anti-angiogenic activity of paclitaxel (Bocci et al., Angiogenesis, 2013, 16:481–492) seen here at ultra low drug doses, is clearly Onco-Aptamer dependent.



Lesion-Targeted Cytokines: Personalized Vaccines

GM-CSF / vWF Fusion Protein for Immune Modulation in Cancers and Focal Lesions of Viral Hepatitis

Design Engineering & Clinical Utility of a lesion-targeted cytokine fusion protein derived from granulocyte-macrophage colony stimulating factor (GM-CSF) and von Willebrand Factor (vWF)—which can deliver the immuno-stimulatory cytokine selectively to the characteristic lesions of invasive cancers, as well as the focal liver lesions that are produced by chronic viral hepatitis infections. Created by proprietary design engineering and genetic engineering, the bifunctional fusion protein transposes a high-affinity exposed collagen-(XC-) binding function inherent in the primary structure of the vWF propeptide (see **Figure 1**) to provide a useful gain-of-function to the potent immune-stimulatory bioactivity of human GM-CSF. By targeting abnormal XC-proteins—a common histopathology of the tumor microenvironment—rather than a specific phenotypic property of the dynamic cancer cells, the XC-binding domain derived from vWF overcomes a major problem of tumor heterogeneity, while providing for pro-active tumor/lesion targeting. Optimized for expression in human producer cells, the lesion-targeted cytokine, along with its experimentally validated protein-protein linkage, was prepared as a codon-optimized gene construct, designed for high-level expression and efficient purification from HEK-293 suspension cultures; thereby generating a properly folded, processed, and naturally glycosylated protein that exhibits the improved pharmacokinetics and pharmacodynamics of its designer bifunctionality: (i) XC-binding for pro-active lesion targeting and (ii) GM-CSF bioactivity for localized immunological stimulation (i.e., vaccination).

Pro-active Targeting of Exposed Collagenous (XC-)Proteins — Lesion Targeting Polypeptides: In both invasive metastatic cancer nodules and the focal lesions of chronic viral hepatitis, the physiological and pharmacological challenge is one of marshalling the relevant cytokine-activated immune cells into the same compartment as the target antigens, which are present within the respective lesions. This clinical problem has been overcome by the development of an "active" lesion-targeted cytokine delivery system that can efficiently deliver systemically administered rGM-CSF to the respective lesions, wherein the lesion-targeted bioactive cytokine serves to recruit and activate immune cell effectors to the presence of the respective antigens.

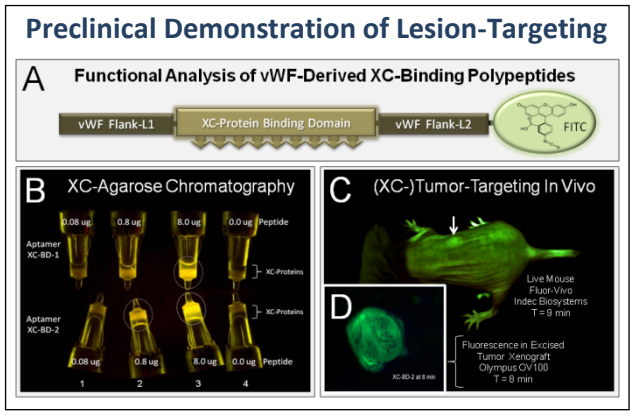


Figure 1: Adaptive engineering of vWF-derived XC-targeting polypeptides for cytokine delivery. Previous designs integrated into viral envelope proteins enabled tumor-targeted gene therapy. To optimize (XC-) lesion targeting of the GM-CSF fusion cytokine, strategic vWF-derived XC-binding sequences, along with flanking sequences (**A**), were compared in a series of *in vitro* binding studies (**B**). Selected constructs were further validated *in vivo* in animal models of cancer (**C**, **D**).

The Clinical Promise and Current Limitations of GM-CSF Cytokine Therapy:

Cytokines such as granulocyte-macrophage colony stimulating factor (GM-CSF) are potent signaling molecules that interact directly with responsive cells of the immune system to generate coordinated, robust albeit self-limited responses to target antigens—which may be either tumor antigens or viral antigens. Recombinant GM-CSF is approved clinically to shorten the time of immune recovery following chemotherapy, and the potential for GM-CSF to stimulate anti-tumor responses has been demonstrated in a wide variety of animal models. While clinical single-agent efficacy has been reported when GM-CSF is injected directly into tumors, the failure of systemic administration to provide benefits that live up to the preclinical promises remains a major challenge in terms of efficient drug delivery and effective antigen presentation. Likewise, GM-CSF has been used for treatment of chronic viral hepatitis with positive antiviral effects; however, the potential for GM-CSF injections to activate the immune system sufficiently to suppress viral replication and eradicate the causative virus has not been consistently achieved. Thus, pro-active targeting of the GM-CSF / vWF fusion cytokine is a major technical advance.

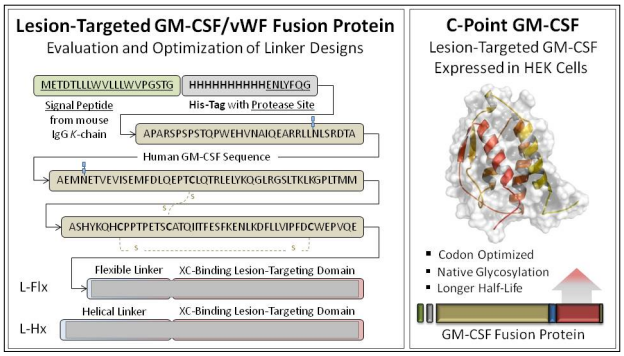


Figure 2: Engineered for superior performance in both cGMP production and clinical applications.

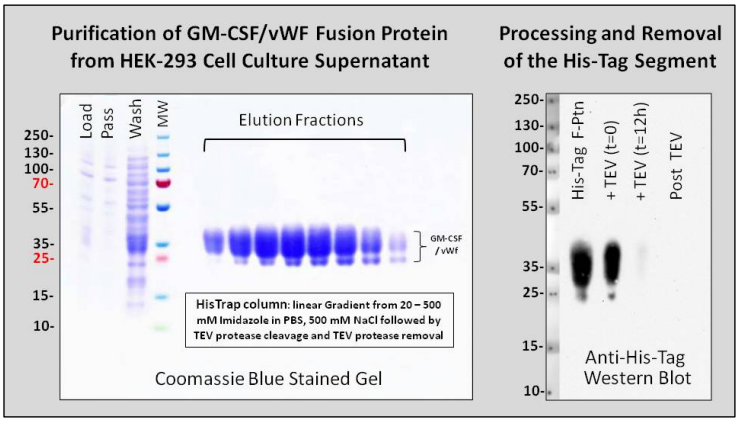
- Genetic engineering for high-level expression
- Advanced linker design improves performance
- Codon-optimization for human producer cells
- Proper folding enhances bio-production yields
- Native glycosylation improves pharmacology
- Cleavable His-Tag facilitates API purification

Previous attempts to target recombinant cytokines to tumors—using specific antibodies or antibody fragments that recognize tumor cell antigens—have achieved some preclinical success. However, the genetic engineering of antibody-cytokine fusion proteins, referred to generically as *immunocytokines*, has been hampered by issues of species specificity, poor protein expression, protein immunogenicity, target validation, inadvertent biodistribution, and natural tumor heterogeneity; thus a GM-CSF immunocytokine has yet to be validated in clinical trials. Several alternative approaches have been developed: (i) vaccination strategies utilizing irradiated tumor cells engineered to secrete recombinant GM-CSF, (ii) gene therapy strategies utilizing targeted retroviral vectors to deliver rGM-CSF gene expression constructs to tumor cells, and (iii) oncolytic immunotherapy, utilizing genetically modified herpes simplex viruses or vaccinia viruses that express rGM-CSF. Although such alternative approaches are very promising, they are not without a plenitude of GMP, QA/QC, clinical, and procedural complexities. **THE COUNTERPOINT APPROACH: COMPETITIVE ADVANTAGES:** By contrast, the XC-targeted GM-CSF / vWf fusion cytokine provides a straightforward approach to cytokine immunotherapy with the design engineering, genetic engineering, and bio-manufacturing of a lesion-targeted GM-CSF fusion cytokine that can be administered by simple intravenous infusion to seek-out and accumulate-in the tumor compartments of invasive cancers (and the focal lesions of chronic hepatitis), enabling clinical efficacy to be consistently achieved at lower cytokine doses with less systemic side effects in the clinic.

Validation of High-Level GM-CSF/vWF Expression:

Protein (API) Expression and Purification from Human HEK-293 cells

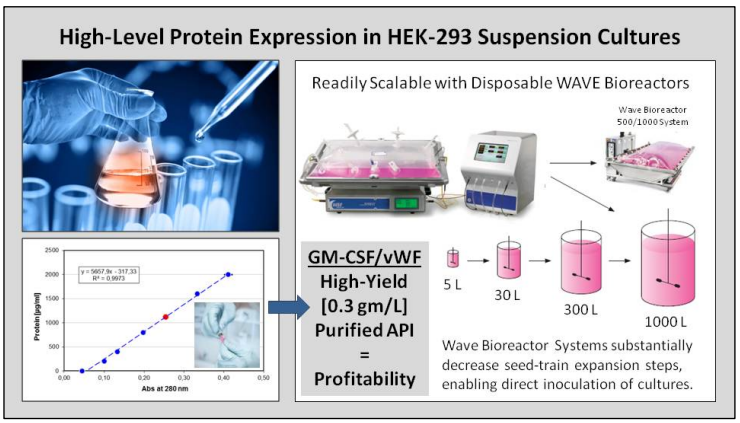
With the CM-CSF / vWF gene construct optimized for expression in human cells, the API is correctly folded, native protein produced by transiently transfected mammalian cells, using an advanced expression system and conditions to obtain high expression yields.



The secreted protein is purified using affinity chromatography via the auxiliary His-tag, which is subsequently removed by proteolytic processing, followed by an additional purification step, yielding the highly-purified protein API. Detailed documentation includes a Coomassie Blue stained PAGE gel and Western blot.

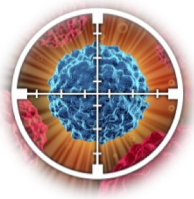
Convenient Scale-Up of GMP Protein Production:

The HEK-293 protein expression system is designed to support high levels of protein production at clinical and commercial scale, while still maintaining similar volumetric protein yields. The advanced system and protocols provide a robust method that is optimized for cultures maintained in standard culture flasks. However, the productivity of the system enables the use of high–volume culture formats for bulk production.



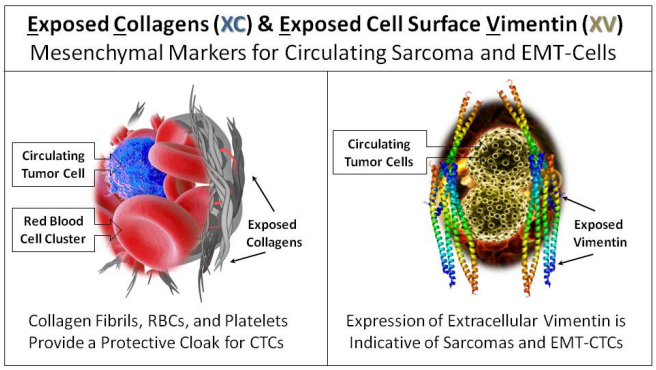
Shown here is a strategy for the adaptation of the HEK-293 expression system for use in the WAVE™ Bioreactor (GE Healthcare) at the 10 L – 500L scale. High protein yields are maintained in the disposable Bioreactor Chambers that are used with the WAVE™ system, which enables a seamless transition from culture flasks to the bioreactor format.

Test Runs of GM-CSF / vWF expression at laboratory scale have demonstrated expected high-level protein expression, with recovery of the purified Protein (API) at ~0.3 g/Liter. This translates to a production yield of 3 grams/10 L and 30 grams/100 L, respectively.



Diagnostic Applications of the Platforms

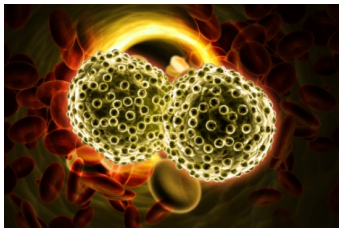
The Targeting Platform Biotechnologies are also aimed at improving **Cancer Diagnostics** and **Liquid Biopsies** with the engineering of **defined antibodies** and **polypeptide targeting aptamers**: synthetic polypeptide constructs designed to recognize abnormal pericellular collagens and/or vimentin proteins arrayed on the surfaces of circulating tumor cells (CTCs) of mesodermal origin, as well as aggressive epithelioid cancers.



Exposed Cell Surface Collagens (XC) and Exposed Cell Surface Vimentin (XV) are characteristic markers for circulating **Sarcoma Cells** and those epithelial cancer cells undergoing the classical **Epithelial-to-Mesenchymal-Transition (EMT)**, which generates an increasingly motile and invasive cell phenotype during the course of cancer progression and metastasis.

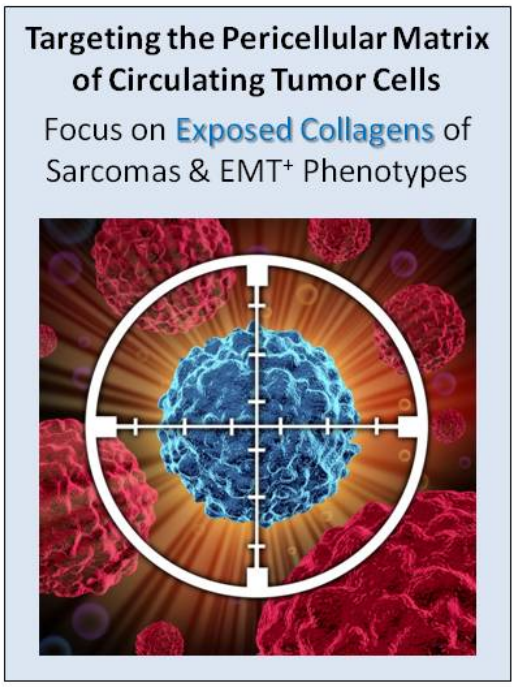
Introduction to the Emerging Utility of Liquid Biopsies:

Molecular characterization of a patient's tumor to guide treatment decisions can have a significant impact on disease outcome; and a **Liquid Biopsy**—a minimally-invasive method of harvesting **Circulating Tumor Cells** (**CTCs**)—allows repeated sampling to monitor genetic changes over time without the need for a tissue biopsy. However promising, the characterization, capture, and potential clinical management of circulating tumor cells (CTCs) of mesodermal origin (e.g., sarcomas) and epithelioid CTCs that are undergoing EMT, are limited by an incomplete understanding of the phenotypic changes in the pericellular matrix that accompany this metastatic progression, and a paucity of well-defined molecular reagents that are selective for these evolving CTC phenotypes.

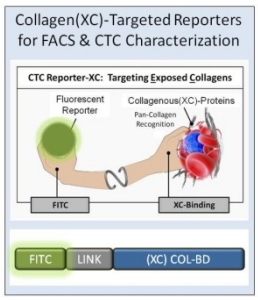


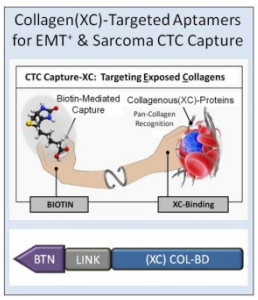
Circulating tumor cells, shed by primary and metastatic cancers into the peripheral circulation—although relatively rare in number—can be collected from blood samples and isolated to serve as "**liquid biopsies**" for molecular and genetic analyses; which promise to revolutionize our understanding of cancer progression and metastasis, and will ultimately improve early detection, assessment, and treatment of cancer patients. Typically, epithelial-derived CTCs are defined as large cytokeratin (CK) positive, epithelial cell adhesion molecule (EpCAM) positive cells; however, the expression of these particular markers is problematic in terms of CTC capture and analysis for both epithelioid cancer cells and cancer stem cells undergoing EMT. In these transitioning cells, the abnormal expression of cell surface vimentin, a characteristically mesenchymal protein, and collagen adhesion matrix (CAM) assays are considered to be among the more reliable phenotypic indicators. In addition, it is well known that CTCs tend to circulate in clusters, often cloaked by activated platelets, which further confounds the capture and analysis of CTCs by current technologies and limited availability of molecular probes.

Mesenchymal Phenotype 101: The Collagens. The onset of tumor metastasis, which contributes to the vast majority of cancer related deaths, involves the dissemination of an increasingly heterogeneous population of primary tumor cells and cancer stem cells that are epigenetically undergoing the EMT, thereby generating more mesenchymal-like CTCs that can escape from EpCAM-based detection methods. In such cases, the concomitant gain of mesenchymal properties, including collagen expression, collagen adherence, and collagen signaling becomes increasingly important. Indeed, new insights into the molecular mechanisms of EMT have identified this epithelial plasticity as an integral aspect of tissue fibrosis, as well as cancer progression.



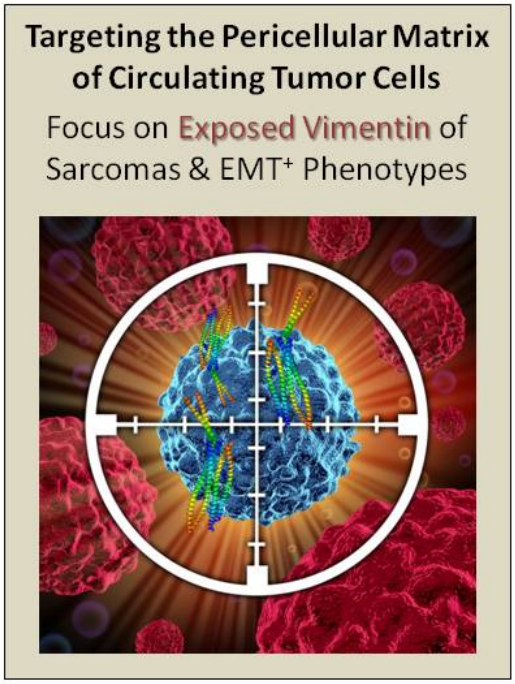
- Collagen Expression—a feature of mesenchymal cells—is an acquired character of many invasive cancer cells
- The Epithelial-to-Mesenchymal Transition (EMT+) promotes collagen synthesis and collagen signaling
- EMT-positive CTCs that escape from EpCAM-based detection display up-regulation of Collagen & Vimentin
- EpCam$^{low/neg}$ CTCs can be enriched by interaction with collagens and adhesive ECM components
- Collagen Adhesion Matrix (CAM) Assays are used to characterize the invasive phenotypes of various CTCs
- CTCs Induce Platelet Aggregation, which promotes their survival, metastasis, and subsequent angiogenesis
- Pericellular Collagen Fragments may serve as a marker for mesenchymal tumors & EMT+ phenotypes





Designer Polypeptides: Tripartite polypeptide XC-targeting aptamers in which each structural component serves an important function in the characterization and/or capture of CTCs that are isolated for diagnostic, prognostic, or therapeutic purposes. The XC-targeting aptamer exhibits a high-affinity collagen-binding domain: amino acid sequences that are selective for one or more of the 28 different types of collagen and/or the associated collagen fragments that are arrayed within the pericellular matrix of CTCs. The collagen-binding polypeptide aptamer—selective for all types of collagen—is used to detect the exposed collagenous (XC) proteins of CTC clusters that are physically associated with collagen-activated platelets. In these embodiments the polypeptide XC-targeting aptamer exhibits an additional functional component (separated by a flexible linker segment) that serves as a molecular marker (e.g. FITC), a capture moiety (e.g., Biotin), or a therapeutic agent (e.g. methotrexate).

Mesenchymal Phenotype 102: Vimentin Filaments. A major drawback of current CTC technology is the generalized reliance on antibodies against EpCAM and cytokeratins as epithelial phenotype-specific markers, which can severely underestimate the actual number of clinically relevant CTCs that are undergoing phenotypic EMT, thus acquiring distinctive mesenchymal characteristics, and becoming increasingly aggressive and invasive. Moreover, the absence of cell-surface mesenchyme-specific markers has hampered research and clinical applications of CTC technologies for both EMT+ carcinomas and sarcomas. It is here at this pivotal point in cancer biology and clinical diagnostics, that the intermediate filament protein vimentin has become a center of attention in the EMT: for the loss of epithelial cell-to-cell contacts and tight junctions, in favor of a spindle shaped morphology with enhanced motility, is correlated with a molecular-genetic switch in cellular intermediate filament proteins from the keratins (epithelial cells) to vimentin (characteristic of mesenchymal cells).



- Vimentin Expression—a property of mesenchymal cells—is an acquired phenotype of EMT+ cancer cells
- Vimentin—normally an intracellular protein—is found on the surface of EMT+ cancer cells (a CTC Marker)
- Cell Surface Vimentin of EMT+ CTCs is correlated with increased cancer cell migration and invasiveness.
- Cell Surface Vimentin is also considered a universal marker and detection tool for Sarcoma CTCs
- Extracellular or Exposed Vimentin (XV) provides a link between metastasis, cancer progression, & prognosis
- Exposed Vimentin (XV) can be used as a target for capturing EpCAM^{negative} EMT+ CTCs and stem cells
- The Diagnostic Utility of XV-protein is currently limited in terms of well-defined markers and capture reagents

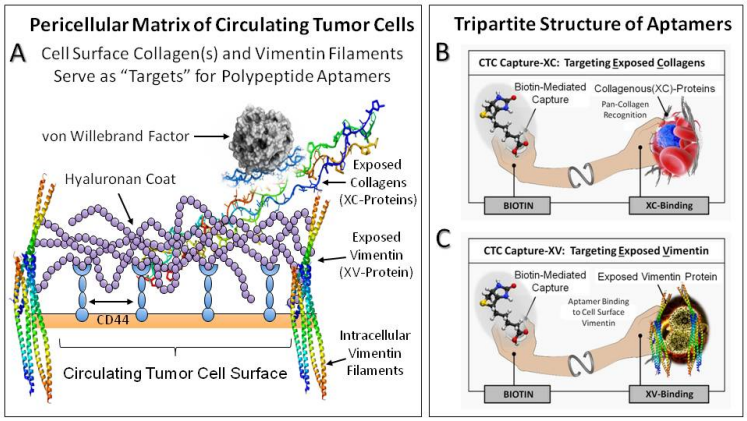
Vimentin is normally considered to be an intracellular protein involved in cytoskeletal functions and dynamics; however, it appears that the filamentous protein can extended beyond the cell membrane, and is indeed trans-located onto the pericellular surfaces in many different cancers: including EMT+ lung cancers, metastatic colorectal and liver cancers, breast, ovary, cervical, brain, and pancreas cancers, prostate cancers, and sarcomas. Taken together as an acquired characteristic of aggressive and invasive cancer cells, the expression of cell surface vimentin is considered a canonical marker of the EMT and a universal CTC marker for mesenchymal tumors. Thus, the potential for molecular targeting of vimentin filaments displayed on the surface of tumor cells will provide powerful tools to augment existing approaches to isolate and characterize CTCs, and may well serve as a designated target for new modes of therapeutic intervention***. Counterpoint is currently evaluating a series of high performance XV-Probes, as well as defined (sequence specific) antibodies for use in advanced Liquid Biopsy Systems.***

The Counterpoint Approach to Targeted Diagnostics:

Counterpoint Biomedica LLC has developed a proprietary series of polypeptide targeting aptamers & immunological reagents that are selective for abnormal cell surface collagens (XC, exposed collagens) and/or vimentin protein (XV, exposed vimentin) embedded within the pericellular matrix of CTCs, and which may be used clinically for differential diagnosis, patient monitoring, or targeted cancer therapy. In addition to physically targeting one or more of these pericellular matrix proteins, the polypeptide targeting aptamers are physically coupled, through a flexible linker segment, to an additional functional domain that can either be a CTC reporter molecule, a CTC capture reagent, or a therapeutic anticancer agent—depending on the desired diagnostic or therapeutic utility of the resulting targeting construct.

Polypeptide Targeting Aptamers: The targeting aptamers are comprised of three fundamental and distinct structural components: **(i) a high affinity XC- and/or XV- binding domain** arrayed as a linear polypeptide, **(ii) a customized linker segment** to prevent steric hindrance and minimize torsional strain, and **(iii) a dedicated functional molecule, which can either be a reporter molecule (e.g. FITC), a physical "capture" reagent (e.g., Biotin), or a bioactive drug (e.g., methotrexate)**. Taken together, these well defined targeting aptamers (synthetic, sequence-specified peptide constructs) provide new and powerful clinical tools (i.e., diagnostic and therapeutic reagents) for the characterization and capture of both mesodermal CTCs and EMT-positive CTCs, for elucidating the nature of metastatic progression in greater detail, for monitoring patient responses to cancer therapies, and additionally, for further development as a selective and precisely-targeted CTC-selective drug delivery platform.

Targeting the pericellular matrix of circulating tumor cells (CTCs):



The pericellular matrix of CTCs (as shown in figure **A**) is composed of (i) hyaluronic acid, an anionic polymer composed of disaccharide repeats, bound to the cell membrane by specific hyaluronan receptors (e.g., CD44) and extending into the extracellular space; (ii) sulfated proteoglycans, including chondroitin sulfate and heparin sulfate; and (iii) various adhesive proteins and fibrils, which may include **vimentin**, specific **types of collagens**, and even **von-Willebrand factor (vWF)**, depending on the CTC phenotype and association with circulating platelets. The presence of exposed collagens (XC-proteins) and/or exposed vimentin (XV-protein) within the PCM of sarcoma CTCs and CTCs undergoing an epithelial-to-mesenchymal transition (EMT) is of considerable diagnostic importance; thereby providing strategic target proteins for Polypeptide Aptamers designed to characterize and/or capture CTCs based on collagenous XC-proteins (**B**) and/or vimentin XV-proteins (**C**) expressed / exposed within the pericellular matrix.

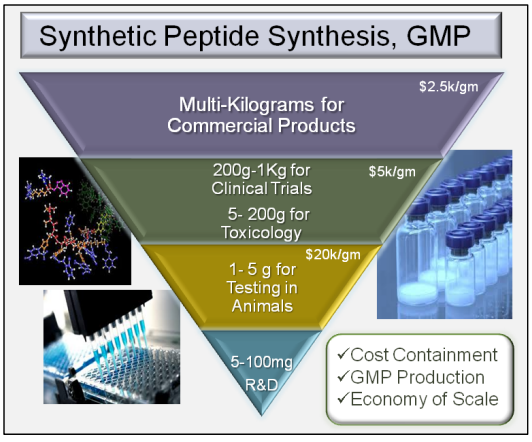
The BioPharmaceutical Market Opportunity:

Cancer is the second most common cause of death in the US, claiming 590,000 Americans per year, more than 1,500 people each day. The number of new cancer patients diagnosed in 2015 was over 1.6 million in the U.S. alone, not including patients with noninvasive cancers and/or skin cancers (American Cancer Society Cancer Facts, 2015). The Agency for Healthcare Research and Quality estimated the overall annual costs of cancer care at more than $227 billion (in 2012): including $89 billion for direct medical costs in the U.S. Sales of cancer drugs in general doubled between 2005 and 2010, with conservative growth estimates of 8 to 10% per year, reaching $93 billion by 2016. **Much of the overall healthcare costs of treating cancer are derived from management of the deleterious side effects of the various cancer treatments**. Thus, in 2015, the National Institutes of Health has launched a **Precision Medicine Initiative**, aimed at improving treatment outcome by developing "Individualized Care" that emphasizes **customized pharmacogenomics, proteomics, new biological markers, and targeted therapies.**

The Market Opportunity: Counterpoint Biomedica is in a unique position to add "Pro-Active" functionality of tumor targeting and tumor surveillance to the most widely-used conventional chemotherapies and biologics, without altering either the chemical composition or the commercial manufacturing of the FDA-approved cancer drugs. In addition to its high-value platforms for **Targeting Pharmaceutical Agents**, the commercial opportunities and impact of **Precision Targeted Diagnostics** is expected to increase exponentially in the years to come. Indeed, cancer diagnostics based on measuring biomarkers in tissue samples has provided revolutionary advances in diagnosis, prognosis, and therapy selection; the advent of minimally invasive **Liquid Biopsies**, in particular, is experiencing explosive growth. The global liquid biopsy market, which totaled $1.6 billion in 2015, is growing at a five-year compound annual growth rate (CAGR) of 22.3%. At this pace, its value will be nearly $4.5 billion by 2020. The cancer liquid biopsy market represents the fastest-growing segment with a five-year CAGR of 36.2%.

Designed with Attention to Economies-of-Scale:

Scalable, Economical Chemical Synthesis of the Targeting Polypeptides



Advantages and Cost Containment

- **Chemical synthesis vs biologic production** of polypeptide targeting-aptamers obviates a number of regulatory and quality control concerns.

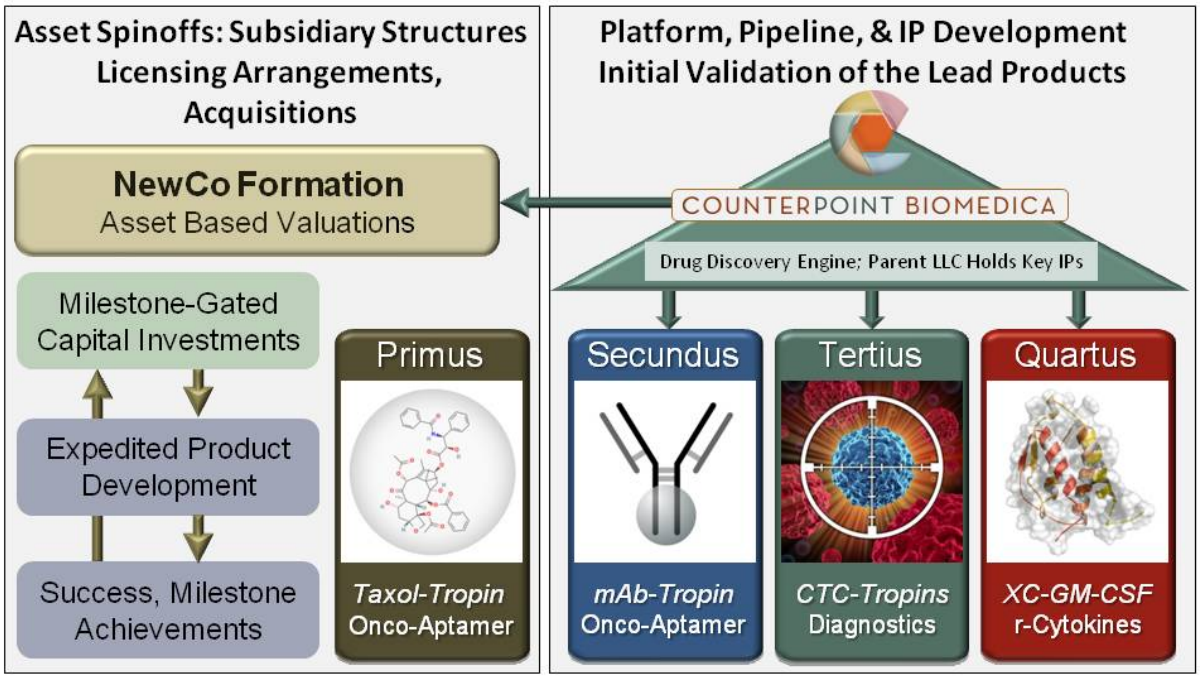
- **Diagnostic Polypeptide product purity and chemical composition** are very well-defined.

- **GMP manufacturing is readily scalable**, from product R&D to clinical trials and commercialization.

The Counterpoint Business Model:

Modular, Asset-based Discovery Engine with Subsidiary LLCs

Counterpoint Biomedica, LLC was created as a Parent Company for the primary intellectual properties licensed from USC and all subsequent intellectual properties generated in the course of new product development and validation. The business model is that of a modular, asset-based infrastructure-light product design, research, and development corporation that functions to generate new oncology products and business opportunities with the formation of a series of Subsidiary LLCs, which are amenable to receive milestone-gated investment capital from qualified individuals, firms, and pharmaceutical corporations. Prospective partnering and product co-development is anticipated in the form of structured licensing arrangements aimed towards the eventual acquisition of each successful Subsidiary LLC—which facilitates the continued discovery and development of new products and technology-based assets.



Investment Opportunities:

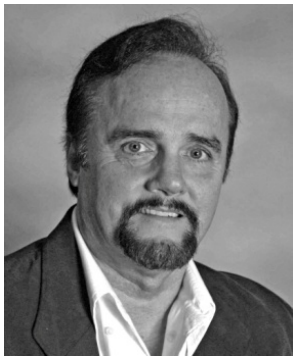
The Counterpoint Business model supports the initial R&D and preclinical validation of each successive class of Onco-Aptamers (assets), providing an innovative approach for de-risking capital investments in the course of high-value technology transfer. Opportunities for asset-based investments, with less commitment of capital resources, and milestone-gated IP-secure structures, support an accelerated path to clinical product development with an aim toward exclusive licensing and/or M&A options.

Officers and Key Personnel of the Company:

Dr. Sant P. Chawla, M.D., F.R.A.C.P, Founder, President & Chief Medical Officer

Dr. Sant P. Chawla is a pioneering physician whose work in clinical oncology has brought him recognition as one of the world's foremost experts of sarcomas and sarcoma therapy. Dr. Chawla holds medical licensures in both Texas and California, and he is board-certified in Internal Medicine and Medical Oncology. He is the Head of the Sarcoma Oncology Center in Santa Monica, CA, where he leads clinical research efforts with ground-breaking cancer treatments, while maintaining strong academic affiliations as an adjunct Associate Professor of Medicine at the M.D. Anderson Cancer Center and Stanford University.

Dr. Frederick L. Hall, Ph.D., Founder & Chief Executive Officer



Dr. Frederick Hall is an established leader in the fields of cell cycle control, oncogene research, and genetic medicine. Founder, former President, CEO, and CSO of Epeius Biotechnologies Corp., Dr. Hall served for 12 years on the faculty of the University of Southern California Schools of Medicine and Pharmacology, where he served as Director of Research in the Departments of Orthopedic Surgery, Cardiothoracic Surgery, and Colorectal Surgery, respectively. Dr. Hall, a Phi Beta Kappa scholar, received his bachelor's degree from the University of Colorado at Boulder and his Ph.D. degree in Physiology and Biophysics from Colorado State University. Dr. Hall is the co-inventor of more than 150 patents for biochemistry, pharmacology, genetic medicine, and targeted drug delivery.

Dr. Erlinda M. Gordon, M.D., Founder & Chief Operating Officer

Dr. Erlinda Gordon, a board-certified pediatric hematologist-oncologist, is considered to be among the most accomplished physician-scientists in the field of genetic medicine. Founder, former COO, and Chairman of the Board of Epeius Biotechnologies Corp., Dr. Gordon served for 20 years on the faculty of the USC School of Medicine, where she was a tenured professor. Credited with the development and validation of the world's first targeted, injectable gene delivery vehicle for metastatic cancer, Dr. Gordon is adept in the design and conduct of clinical trials for Investigational New Drugs. Dr. Gordon received her M.D. degree (cum laude) in 1971 from the University of Santo Tomas School of Medicine and Surgery in Manila, Philippines, and her pediatric residency and hematology-oncology fellowship training at Case Western Reserve University School of Medicine in Cleveland, Ohio. She is currently Director of Biological and Immunological Therapies at the Sarcoma Oncology Center in Santa Monica, California.

Corporate Contacts

For further information, please contact…

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Dr. Sant P. Chawla, CMO

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Santa Monica, California 90403

New Biotechnology Patents Assigned to The Company:

Patents Assigned to Counterpoint Biomedica LLC

Targeting of pharmaceutical agents to pathologic areas using bifunctional fusion polypeptides
Patent number: 11273206
Abstract: Provided herein are new compositions and methods to target pharmaceutical agents to pathological areas by utilizing bifunctional fusion polymers or nanoparticles. These fusion polymers and nanoparticles contain two or more domains: (i) sequences that bind to exposed collagenous (XC-) proteins present in pathological areas, including cancerous lesions and (ii) domains that bind to pharmaceutical agents. The drug-binding functionality of these fusion polymers and nanoparticles is based on high-affinity, non-covalent interactions.
Type: Grant
Filed: August 20, 2019
Date of Patent: March 15, 2022
Assignee: Counterpoint Biomedica LLC
Inventors: Frederick L. Hall, Erlinda M. Gordon

Polypeptide targeting aptamers for characterization, capture, and clinical management of circulating tumor cells
Patent number: 10981980
Abstract: Provided herein are new compositions and methods to target and deliver agents to pathological areas by utilizing multifunctional compounds. These compounds include three or more domains: (i) a vimentin-binding peptide, (ii) a linker, and (iii) a drug binding, a capturing reagent, or a detectable moiety. These compounds can be used to detect, isolate, and/or treat cancerous cells such as circulating tumor cells.
Type: Grant
Filed: June 9, 2017
Date of Patent: April 20, 2021
Assignee: Counterpoint Biomedica LLC
Inventors: Frederick L. Hall, Erlinda M. Gordon

Exposed collagen-targeted fusion cytokine for immune modulation in invasive cancers and lesions of infections
Patent number: 10913779
Abstract: Provided herein are new compositions and methods to target pharmaceutical agents to pathological areas by utilizing fusion polypeptides. These fusion polypeptides contain two or more domains: (i) aptamer sequences that bind to exposed collagenous (XC-) proteins present in pathological areas, including cancerous and viral lesions, (ii) immunomodulators, such as cytokines, and optionally (iii) at least one linker joining the two domains or at the terminus of the polypeptide. In some cases, the linker is a rigid linker, e.g., a rigid helical linker. Also provided herein are methods of treating cancer and/or infectious diseases using the new fusion polypeptides.
Type: Grant
Filed: January 25, 2018
Date of Patent: February 9, 2021
Assignee: Counterpoint Biomedica LLC
Inventors: Frederick L. Hall, Erlinda M. Gordon