

Scientific Program
17th Workshop on Vitamin D



June 17 – 20, 2014
The Westin Chicago River North
Chicago, IL

Front Cover Images

Main Molecular Image: Not surprisingly, the molecular model describes the three dimensional shape of the steroid hormone, $1\alpha,25$ -dihydroxy vitamin D_3 that binds selectively and tightly to its cognate protein receptor, the vitamin D receptor (VDR) atom in the 3D model. Thanks are due to Bill Okamura who is a Professor of Organic Chemistry in the Chemistry Department at the University of California. He spent significant time evaluating and validating the 3D image of all the bonds of the of $1\alpha,25(OH)_2D_3$ on the front of the cover. The two-dimensional structure (lower right) is $1\alpha,25(OH)_2D_3$. The fine lines connect each atom in the two-dimensional view with the same atom in the 3D model.

Histogram: The histogram reports the number of papers published and listed in the National Library of Medicine that included the term 'vitamin D' in either the Title or the Abstract from 1950 - 2013. In the past 53 years 37,596 papers were published. In the 2012 year 3662 papers were published, and in 2013 3826 papers were published.

Image of Man: The image is known as the **Vitruvian Man**.



The Vitruvian Man is a world-renowned drawing created by Leonardo da Vinci in about 1487. It is accompanied by notes based on the work of the famed architect, Vitruvius. The drawing, which is in pen and ink on paper, depicts a male figure in two superimposed positions with his arms and legs apart and simultaneously inscribed in a circle and square. The drawing and text are sometimes called the Canon of Proportions. It is stored in the Gallerie dell'Accademia in Venice, Italy.

The drawing is based on the correlations of ideal human proportions with geometry described by the ancient Roman architect Vitruvius in Book III of his treatise *De Architectura*. Vitruvius described the human figure as being the principal source of proportion among the classical orders of architecture. Leonardo's drawing is traditionally named in honor of the architect. (Abstracted from Wikipedia)

The front cover was designed by Sohail Wasif, in Computing and Communications at the University of California, Riverside.

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17th Workshop on Vitamin D

Time Table

Tuesday, June 17, 2014

3:00 - 5:00 PM	Workshop Executive Committee Meeting.....	Promenade Ballroom C
2:00 - 6:00 PM	Registration Desk Open	Grand Court
6:00 - 8:00 PM	Welcoming Reception.....	Grand Court

Wednesday, June 18, 2014

8:15 - 8:30 AM	Opening Remarks.....	Grand Ballroom AB
8:30 - 9:50 AM	Session I	Grand Ballroom AB
9:50 - 10:10 AM	Coffee Break	Foyer
10:10 - 12:00 PM	Session II	Grand Ballroom AB
12:00 - 2:00 PM	Poster Session I (With Lunch)	Promenade Ballroom AB
2:00 - 3:35 PM	Session III	Grand Ballroom AB
3:35 - 3:55 PM	Coffee Break	Foyer
3:55 - 5:30 PM	Session IV	Grand Ballroom AB
5:45 - 6:50 PM	Supplemental Scientific Session	Grand Ballroom AB

Thursday, June 19, 2014

8:30 - 10:20 AM	Session V	Grand Ballroom AB
10:20 - 10:40 AM	Coffee Break	Foyer
10:40 - 12:00 PM	Session VI	Grand Ballroom AB
12:00 - 1:50 PM	Poster Session II (With Lunch)	Promenade Ballroom AB
1:50 - 3:40 PM	Session VII	Grand Ballroom AB
3:40 - 4:00 PM	Coffee Break	Foyer
4:00 - 5:20 PM	Session VIII	Grand Ballroom AB
5:20 - 5:30 PM	Recognition of Young Investigator and Travel Awardees	Grand Ballroom AB
6:30 - 8:00 PM	Workshop Buffet Dinner	River Level 2

Friday, June 20, 2014

8:30 - 9:30 AM	Session IX	Grand Ballroom AB
9:30 - 9:50 AM	Coffee Break	Foyer
9:50 - 11:40 AM	Session X	Grand Ballroom AB
11:40 - 1:40 PM	Poster Session III (With Lunch)	Promenade AB
1:40 - 3:15 PM	Session XI	Grand Ballroom AB
3:15 - 3:35 PM	Coffee Break	Foyer
3:35 - 5:10 PM	Session XII	Grand Ballroom AB
5:10 - 5:20 PM	Close of Meeting Announcements	Grand Ballroom AB

Official Sponsors
17th Workshop on Vitamin D

Leadership Sponsors

Chugai Pharmaceutical Co. Ltd. (Japan)

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**Major funding for the Vitamin D Workshops is provided by the National Institute on Aging
(Conference Grant R13 AG048689)**

Organizers

17th Workshop on Vitamin D

Workshop Executive Committee (WEC)

JoEllen Welsh, USA (Chair)
Daniel Bikle, USA
Roger Bouillon, Belgium
Sylvia Christakos, USA
David Goltzman, Canada
Martin Hewison, USA

Paul Lips, The Netherlands
Rebecca Mason, Australia
Chantal Mathieu, Belgium
Anthony Norman, USA
Wesley Pike, USA

Program Advisory Committee (PAC)

Heike Bischoff-Ferrari, Switzerland
Ricardo Boland, Argentina
Moray Campbell, USA
Margherita Cantorna, USA
Carsten Carlberg, Finland
Geert Carmeliet, Belgium
Kevin Cashman, Ireland
Marie Demay, USA
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Atsushi Kittaka, Japan

Richard Kremer, Canada
Yan Chun Li, USA
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Miguel Maestro, Spain
Toshio Matsumoto, Japan
John McGrath, Australia
Howard Morris, Australia
Antonio Mourino, Spain
John Pettifor, South Africa
Joerg Reichrath, Germany
George Studzinski, USA
Hans Van Leeuwen, The Netherlands
John White, Canada
Susan Whiting, Canada

Riverside Committee

Nancy Day

Meetings Plus

Roxanne Hall
Aelinor Conaway
Carol Montgomery
Natalie Bishop
Jean Hood
Cherie Johnston

General Information

17th Workshop on Vitamin D

June 17 – 20, 2014

Welcoming Reception, Tuesday, June 17, 2014

Please join us for a Welcoming Reception Tuesday evening from 6:00 – 8:00 pm in the Grand Court, Westin River North. All delegates and their registered accompanying guests are cordially invited.

Poster Sessions, Wednesday – Friday, June 18 – 20, 2014

There will be three poster sessions during the Workshop. The poster sessions will be held each afternoon during the lunch period in Promenade Ballroom AB.

Wednesday Poster Session

Mount Time: Tuesday, June 17th from 12:00 – 5:00 pm and Wednesday, June 18, 2014 / 8:00 – 11:00 am
Dismount: Wednesday, June 18, 2014 / 5:30 – 7:00 pm
Posters should remain up for viewing until 5:30 on June 18th for viewing.

Thursday Poster Session

Mount Time: Wednesday, June 18th from 7:00 – 8:00 pm and Thursday, June 19th from 8:00 – 11:00 am
Dismount: Thursday, June 19, 2014 / 5:30 – 7:00 pm
Posters should remain up for viewing until 5:30 on June 19th for viewing.

Friday Poster Session

Mount Time: Thursday, June 19th from 7:00 – 8:00 pm and Friday, June 20th from 8:00 – 11:00 am
Dismount: Friday, June 20, 2014 / 3:00 – 5:00 pm
Posters should remain up for viewing until 3:00 on June 20th for viewing.

Breaks and Social Events

Lunches: On Wednesday, Thursday and Friday, lunches are included in the registration fee. The lunches will be available each day outside Promenade Ballroom AB.

Coffee Breaks: All registered Delegates are invited to enjoy a cup of coffee during the coffee breaks in the Grand Foyer.

Social Event: Thursday, June 19th: All registered delegates and registered guests are invited to participate in an informal buffet dinner beginning at 6:30 pm on River Level 2. A cash bar will be available.



Scientific Program – Wednesday
17th WORKSHOP ON VITAMIN D

WEDNESDAY, JUNE 18, 2014

8:15 - 8:30 AM **OPENING REMARKS**

Session I: VITAMIN D PHYSIOLOGY IN HUMAN AND MOUSE

Session Chair: Martin Hewison, Co-Chair: YC Li

8:30 - 8:35 AM Chair's Introduction

8:35 - 9:00 AM H. DeLuca IS THERE MORE TO LEARN ABOUT VITAMIN D METABOLISM?

9:00 - 9:05 AM *Discussion*

9:05 - 9:30 AM D. Goltzman LESSONS FROM VDRKO AND CYP27B1 NULL MOUSE MODELS

9:30 - 9:35 AM *Discussion*

9:35 - 9:45 AM G. Jones OF KNOCKOUT MICE AND MEN: USE OF LC-MS/MS TO COMPARE

9:45 - 9:50 AM *Discussion* VITAMIN D METABOLIC PROFILES OF CYP27B1-NULL MICE AND PATIENTS WITH VDDR-TYPE I

9:50 - 10:10 AM COFFEE BREAK

Session II: VITAMIN D SOURCES AND BODY POOLS

Session Chair: Rebecca Mason, Co-Chair: Helen Henry

10:10 - 10:15 AM Chair's Introduction

10:15 - 10:40 AM M. Kimlin UVR AND VITAMIN D SYNTHESIS IN HUMANS

10:40 - 10:45 AM *Discussion*

10:45 - 11:10 AM K. Cashman VITAMIN D: DIETARY REQUIREMENTS AND FORTIFICATION

11:10 - 11:15 AM *Discussion* ISSUES

11:15 - 11:25 AM K. Jones HUMAN PLASMA VITAMIN D BINDING PROTEIN (DBP) ASSAYS ARE

11:25 - 11:30 AM *Discussion* INFLUENCED BY DBP GENOTYPE AND ASSAY ANTIBODY

11:30 - 11:40 AM J. Fleet IDENTIFICATION OF NOVEL GENETIC LOCI AFFECTING VITAMIN D

11:40 - 11:45 AM *Discussion* METABOLITE LEVELS IN BXD INBRED MICE FED HIGH AND LOW CALCIUM DIETS

11:45 - 11:55 AM N. Koszewski DELIVERY OF 1,25-DIHYDROXYVITAMIN D₃ (1,25D₃) TO THE

11:55 - 12:00 PM *Discussion* COLON BY SOLANUM GLAUCOPHYLLUM (SG) PLANT LEAVES AND IDENTIFICATION OF A 1,25D₃-GLYCOSIDE ISOLATED FROM THE LEAVES

12:00 - 2:00 PM **LUNCH AND POSTER SESSION I VIEWING**

Session III:**VITAMIN D RECEPTOR BIOLOGY**

Session Chair: J. Wesley Pike, Co-Chair: Marie Demay

2:00 - 2:05 PM	Chair's Introduction	
2:05 - 2:30 PM	D. Bikle	NOVEL ACTIONS OF VDR IN SKIN HOMEOSTASIS AND CANCER
2:30 - 2:35 PM	<i>Discussion</i>	
2:35 - 3:00 PM	M. Campbell	NUCLEAR RECEPTOR NETWORKS IN PROSTATE CANCER
3:00 - 3:05 PM	<i>Discussion</i>	
3:05 - 3:15 PM	R. Zhou	HETEROGENEOUS NUCLEAR RIBONUCLEOPROTEIN C1/C2 LINKS
3:15 - 3:20 PM	<i>Discussion</i>	TRANSCRIPTIONAL AND SPLICING ACTIONS OF 1,25-DIHYDROXYVITAMIN D
3:20 - 3:30 PM	P. Dhawan	COOPERATION BETWEEN THE VITAMIN D RECEPTOR, C/EBP
3:30 - 3:35 PM	<i>Discussion</i>	ALPHA, PU.1 AND THE SWI/SNF COMPLEX IN THE CONTROL OF THE EXPRESSION OF CATHELICIDIN AND CD14 IN LUNG EPITHELIAL CELLS
3:35 - 3:55 PM	COFFEE BREAK	

Session IV:**EPIDEMIOLOGY OF VITAMIN D AND DISEASE**

Session Chair: Sylvia Christakos, Co-Chair: John McGrath

3:55 - 4:00 PM	Chair's Introduction	
4:00 - 4:25 PM	A. Ascherio	VITAMIN D & MULTIPLE SCLEROSIS
4:25 - 4:30 PM	<i>Discussion</i>	
4:30 - 4:55 PM	E. Orwoll	VITAMIN D FINDINGS FROM THE MALE OSTEOPOROSIS (MR OS) STUDY
4:55 - 5:00 PM	<i>Discussion</i>	
5:00 - 5:10 PM	I. Schoenmakers	25(OH)D3 HALF-LIFE IS LONGER IN OLDER THAN YOUNGER ADULTS
5:10 - 5:15 PM	<i>Discussion</i>	
5:15 - 5:25 PM	C. Simpson	EFFECT OF 25(OH)VITAMIN D REFERENCE METHOD PROCEDURE (RMP) ALIGNMENT ON CLINICAL MEASUREMENTS OBTAINED WITH THE IDS CHEMILUMINESCENT-BASED AUTOMATED ANALYZER
5:25 - 5:30 PM	<i>Discussion</i>	
5:45 - 6:50PM	SUPPLEMENTAL SCIENTIFIC SESSION WITH RECEPTION THERAPEUTIC USES OF VITAMIN D IN JAPAN	
	Session Chairs: Tony Norman and Roger Bouillon	
5:45 - 5:50PM	Chair's Introduction	
5:50 - 6:20PM	R. Okazaki	VITAMIN D IN THE JAPANESE MEDICAL ENVIRONMENT
6:20 - 6:25PM	<i>Discussion</i>	
6:25 - 6:55PM	T. Matsumoto	ELDECALCITOL REDUCES OSTEOPOROTIC FRACTURES BY UNIQUE MECHANISMS
6:55 - 7:00PM	<i>Discussion</i>	
7:00 - 9:00 PM	RECEPTION	

Scientific Program – Thursday
17th WORKSHOP ON VITAMIN D

Session V:

VITAMIN D AND THE IMMUNE SYSTEM

Session Chair: Chantal Mathieu, Co-Chair: Margherita Cantorna

8:30 - 8:35 AM	Chair's Introduction	
8:35 - 9:00 AM	J. White	VITAMIN D AND INNATE IMMUNITY
9:00 - 9:05 AM	<i>Discussion</i>	
9:05 - 9:15 AM	R. Chun	VITAMIN D SUPPLEMENTATION AND ANTI-BACTERIAL IMMUNE
9:15 - 9:20 AM	<i>Discussion</i>	RESPONSES IN PATIENTS WITH HIV/AIDS
9:20 - 9:30 AM	J. James	THE ROLE OF THE VITAMIN D RECEPTOR IN B CELL ANTIBODY
9:30 - 9:35 AM	<i>Discussion</i>	PRODUCTION
9:35 - 9:45 AM	G. Bomfim	1 α ,25-DIHYDROXYVITAMIN D ₃ GENERATES TOLEROGENIC HUMAN
9:45 - 9:50 AM	<i>Discussion</i>	DENDRITIC CELLS THAT ARE DEPENDENT ON GLYCOLYSIS AND ON THE PI3K-AKT-MTOR PATHWAY TO MAINTAIN PHENOTYPE AND FUNCTION
9:50 - 10:00 AM	R. Wei	STUDIES IN MICE WITH TRANSGENIC EXPRESSION OF THE VDR
10:00 - 10:05 AM	<i>Discussion</i>	IN THE DISTAL INTESTINE OF VDR KNOCKOUT MICE PROVIDE EVIDENCE FOR A CRITICAL ROLE OF INTESTINAL EPITHELIAL CELLS IN THE SUPPRESSION OF INFLAMMATORY BOWEL DISEASE BY 1,25(OH) ₂ D ₃ /VDR
10:05 - 10:15 AM	Y.C. Li	MICRORNA-346 MEDIATES TNFALPHA INDUCED DOWN
10:15 - 10:20 AM	<i>Discussion</i>	REGULATION OF VDR IN GUT EPITHELIAL CELLS.
10:20 - 10:40 AM	COFFEE BREAK	

Session VI:

VITAMIN D & CANCER - BENCH TO BEDSIDE

Session Chair: JoEllen Welsh, Co-Chair: David Feldman

10:40 - 10:45 AM	Chair's Introduction	
10:45 - 11:10 AM	R. Bostick	VITAMIN D, CALCIUM AND COLON CANCER – PREVENTION
11:10 - 11:15 AM	<i>Discussion</i>	STUDIES AND BIOMARKERS
11:15 - 11:25 AM	E. Kallay	THE ROLE OF THE CALCIUM SENSING RECEPTOR IN THE ANTI-
11:25 - 11:30 AM	<i>Discussion</i>	NEOPLASTIC EFFECTS OF ACTIVE VITAMIN D IN THE COLON
11:30 - 11:40 AM	P. Lungchuykiet	ROLE OF VITAMIN D AND ITS RECEPTORS IN SUPPRESSING
11:40 - 11:45 AM	<i>Discussion</i>	OVARIAN CANCER INVASION TO OMENTUM
11:45 - 11:55 AM	L. Arnold	VITAMIN D RECEPTOR-COREGULATOR INHIBITORS AS ANTI-
11:55 - 12:00 PM	<i>Discussion</i>	CANCER REAGENTS
12:00 - 1:50 PM	LUNCH AND POSTER SESSION II VIEWING	

Session VII:**VITAMIN D, CALCIUM AND BONE**

Session Chair: Anthony Norman, Co-Chair: Richard Kremer

1:50 - 1:55 PM	Chair's Introduction	
1:55 - 2:20 PM	S. Christakos	VITAMIN D REGULATION OF INTESTINAL CALCIUM TRANSPORT
2:20 - 2:25 PM	<i>Discussion</i>	
2:25 - 2:50 PM	R. Kumar	VITAMIN D, FGF23 AND SCLEROSTIN INTERACTIONS IN BONE
2:50 - 2:55 PM	<i>Discussion</i>	PHYSIOLOGY
2:55 - 3:05 PM	P. Reyes Fernandez	DUODENAL CALCIUM ABSORPTION INCREASES TO COMPENSATE
3:05 - 3:10 PM	<i>Discussion</i>	FOR THE LOSS OF VITAMIN D RECEPTOR FROM THE LARGE
		INTESTINE AND KIDNEY OF MICE
3:10 - 3:20 PM	M. Petkovich	MODIFIED RELEASE ORAL CALCIFEDIOL EFFECTIVELY TREATS
3:20 - 3:25 PM	<i>Discussion</i>	VITAMIN D INSUFFICIENCY WITH MINIMAL CYP24 UP-REGULATION
3:25 - 3:35 PM	Maryam Doroudi	1,25(OH) ₂ D ₃ RECEPTOR COMPLEX COMPONENTS ARE REQUIRED
3:35 - 3:40 PM	<i>Discussion</i>	FOR WNT5A CALCIUM DEPENDENT SIGNALING
3:40 - 4:00 PM	COFFEE BREAK	

Session VIII:**VITAMIN D AND STEM CELLS**

Session Chair: Dan Bikle, Co-Chair: John White

4:00 - 4:05 PM	Chair's Introduction	
4:05 - 4:30 PM	M. Demay	VDR ACTIONS IN HAIR FOLLICLE STEM CELLS
4:30 - 4:35 PM	<i>Discussion</i>	
4:35 - 5:00 PM	N. Suh	VITAMIN D INHIBITION OF BREAST CANCER STEM CELLS
5:00 - 5:05 PM	<i>Discussion</i>	
5:05 - 5:15 PM	G. Studzinski	1,25-DIHYDROXYVITAMIN D ₃ -INDUCES MONOCYTIC
5:15 - 5:20 PM	<i>Discussion</i>	DIFFERENTIATION OF HUMAN MYELOID LEUKEMIA CELLS BY
		REGULATING C/EBP BETA EXPRESSION THROUGH MEF2C
5:20 -	RECOGNITION OF WORKSHOP AWARD RECIPIENTS	
6:30 - 8:00 PM	WORKSHOP BUFFET DINNER	

Scientific Program – Friday
17th WORKSHOP ON VITAMIN D

Session IX:

PLENARY LECTURE

Joint Session: Vitamin D Workshop and the International Aldosterone Conference

Session Co-chairs: Peter Fuller and JoEllen Welsh

8:30 - 9:25 AM D. Mangelsdorf NUCLEAR RECEPTOR SIGNALING PATHWAYS AND METABOLISM
 9:25 - 9:30 AM *Discussion*

9:30 - 9:50 AM COFFEE BREAK

Session X:

VITAMIN D, ENERGY METABOLISM AND ADIPOSITY

Session Chair: Roger Bouillon, Co-Chair: Reinhold Erben

9:50 - 9:55 AM Chair's Introduction

9:55 - 10:20 AM J. Welsh VITAMIN D REGULATION OF ENERGY METABOLISM AND INSULIN
 10:20 - 10:25 AM *Discussion* SENSITIVITY

10:25 - 10:50 AM A. Hanley EPIDEMIOLOGY OF VITAMIN D AND TYPE 2 DIABETES/METABOLIC
 10:50 - 10:55 AM *Discussion* SYNDROME

10:55 - 11:05 AM C. Bernal-Mizrachi ABSENCE OF MACROPHAGE VITAMIN D RECEPTOR
 11:05 - 11:10 AM *Discussion* ACCELERATES ATHEROSCLEROSIS IN MICE

11:10 - 11:20 AM C. Carlberg CONSERVED GENOMIC VDR BINDING LOCI DIRECT THE
 11:20 - 11:25 AM *Discussion* SELECTION OF BIOMARKERS FOR THE VITAMIN D
 RESPONSIVENESS OF HUMAN INDIVIDUALS

11:25 - 11:35 AM S. Shab-Bidar VITAMIN D RECEPTOR FOK-I POLYMORPHISM MODULATES
 11:35 - 11:40 AM *Discussion* DIABETIC HOST RESPONSE TO VITAMIN D INTAKE: NEED FOR A
 NUTRIGENETIC APPROACH

11:40 - 1:40 PM **LUNCH AND POSTER SESSION III VIEWING**

Session XI:

VITAMIN D SUPPLEMENTATION TRIALS

Session Chair: Paul Lips, Co-Chair: Chris Gallagher

1:40 - 1:45 PM Chair's Introduction

1:45 - 2:10 PM R. Jorde RANDOMIZED CONTROLLED TRIALS OF VITAMIN D
 2:10 - 2:15 PM *Discussion* SUPPLEMENTATION

2:15 - 2:40 PM J. Manson VITAMIN D AND THE PREVENTION OF CANCER AND CVD:
 2:40 - 2:45 PM *Discussion* RATIONALE, DESIGN, AND UPDATE ON THE STATUS OF VITAL

2:45 - 2:55 PM L. Tripkovic THE D2-D3 STUDY: COMPARING THE EFFICACY OF 600IU/D
 2:55 - 3:00 PM *Discussion* VITAMIN D2 VS. VITAMIN D3 IN RAISING SERUM 25OHD LEVELS

3:00 - 3:10 PM K. Badenhoop THE EFFECT OF VITAMIN D THERAPY ON PERIPHERAL HLA-DR
 3:10 - 3:15 PM *Discussion* EXPRESSING T CELL SUBPOPULATIONS IN PATIENTS WITH
 AUTOIMMUNE ADDISON'S DISEASE: A RANDOMIZED
 CONTROLLED TRIAL

3:15 - 3:35 PM COFFEE BREAK

Session XII:

NEW INSIGHTS INTO VITAMIN D BIOLOGY

Session Chair: David Goltzman, Co-Chair: Ricardo Boland

3:35 - 3:40 PM	Chair's Introduction	
3:40 - 4:05 PM	J. McGrath	VITAMIN D AND THE BRAIN
4:05 - 4:10 PM	<i>Discussion</i>	
4:10 - 4:35 PM	D. Fraser	THE ORIGIN AND METABOLISM OF VITAMIN D IN FISH
4:35 - 4:40 PM	<i>Discussion</i>	
4:40 - 4:50 PM	J. Mulligan	CIGARETTE SMOKE EXPOSURE EXACERBATES DISEASE-RELATED IMPAIRMENT OF 25VD3 TO 1,25VD3 METABOLISM BY HUMAN SINONASAL EPITHELIAL CELLS
4:50 - 4:55 PM	<i>Discussion</i>	
4:55 - 5:05 PM	A. Slominski	NOVEL NON-CALCEMIC SECOSTEROIDS ARE PRODUCED IN THE HUMAN EPIDERMIS AND PROTECT AGAINST SOLAR RADIATION
5:05 - 5:10 PM	<i>Discussion</i>	

CLOSE OF MEETING ANNOUNCEMENTS