

# USGEB2008

February 6-7 EPFL-Lausanne

Biology meets engineering

<http://usgeb2008.epfl.ch>

Registration and abstract deadline: December 5<sup>th</sup>, 2007

# Program Overview

Wednesday February 6, 2008

08:00-09:30	<b>REGISTRATION</b> ( <i>Building SG</i> )
	Coffee-Tea will be provided
9:30-10:20	<b>OPENING PLENARY SESSION</b> ( <i>Building SG - Room SG 1</i> )
	<b>WELCOME by D. Trono</b> (EPFL-CH), <b>Chair USGEB-2008</b> <b>H.-U. Simon</b> (Univ. of Bern-CH), <b>USGEB President</b> <u>KEYNOTE SPEAKER (1):</u> <b>Evolution Of Cooperation In Ant And Robot Societies.</b> L. Keller (UNIL- CH)
10:30-11:00	<b>Coffee &amp; Tea</b> ( <i>Building CO - on the three floors</i> )
11:00-13:00	<b>CONCURRENT SYMPOSIA (4)</b> ( <i>Building CO</i> )
	<u>SYMPOSIUM 1: ZMG - Genes And Development</u> ( <i>Room CO 1</i> ) <u>SYMPOSIUM 2: PHA - Small Molecules-Signaling Pathways: Cell Programming And Therapeutic Interventions</u> ( <i>Room CO 3</i> ) <u>SYMPOSIUM 3: STSBC - Stem Cells: From Bench To Bedside</u> ( <i>Room CO 011</i> ) <u>SYMPOSIUM 4: Climbing To New Perspectives For Biomedical Research With Bio-Imaging</u> ( <i>Room CO 2</i> )
13:00-15:00	<b>LUNCH WITH POSTERS SESSION</b> ( <i>Building CO - on the three floors</i> )
15:00-16:15	<b>PLENARY SESSION</b> ( <i>Room CO 1</i> )
	<u>KEYNOTE SPEAKERS (2):</u> <b>Designing Biological Systems.</b> P. Silver (Harvard Medical School-USA) <b>Robustness And Scaling In Developmental Patterning.</b> N. Barkai (Weizmann Institute-Israel)
16:30-18:30	<b>CONCURRENT SYMPOSIA (3)</b> ( <i>Building CO</i> )
	<u>SYMPOSIUM 5: PHY - Cardiac Tissue Engineering</u> ( <i>Room CO 2</i> ) <u>SYMPOSIUM 6: Engineering Meets Biology: Analysis And Design From The Molecule Up</u> ( <i>Room CO 1</i> ) <u>SYMPOSIUM 7: ssAHE - Contribution Of New Technologies To Combine Structural And Functional Analysis In Cellular Imaging</u> ( <i>Room CO 3</i> )
18:30-21:00	<b>COCKTAIL DINNER</b> ( <i>Building CO</i> )
	All Participants Are Invited To attend <b>The Cocktail Dinner</b> - ( <i>Building CO - on the three floors</i> )

## Thursday February 7, 2008

<b>09:00-10:15</b>	<b>PLENARY SESSION</b> ( <i>Room CO 1</i> )
	<p><u>KEYNOTE SPEAKERS (2):</u></p> <p><b>Studying Biomechanics to Gain Insight Into Sensory Perception.</b> M. Hartmann (Northwestern University-USA)</p> <p><b>Lymphatic Biology And Interstitial Flow: Roles In Cancer Metastasis And Immunity.</b> M. Swartz (EPFL-CH)</p>
<b>10:30-11:00</b>	<b>Coffee &amp; Tea</b> ( <i>Building CO - on the three floors</i> )
<b>11:00-13:00</b>	<b>CONCURRENT SYMPOSIA (3)</b>
	<p><u>SYMPOSIUM 8: SSO: Imaging Cancer For Better Therapy</u> (<i>Room CO 2</i>)</p> <p><u>SYMPOSIUM 9: SGV: Revision Of The Animal Protection Ordinance : What Are The Consequences For Research And Animal House Management?</u> (<i>Room CO 3</i>)</p> <p><u>SYMPOSIUM 10: BIO: Structure And Function Of Cellular Nanomachines</u> (<i>Room CO 1</i>)</p>
<b>13:00-15:00</b>	<b>LUNCH WITH POSTERS SESSION AND EXHIBITION VIEWING</b> ( <i>Building CO - on the three floors</i> )
<b>15:00-16:15</b>	<b>PLENARY SESSION</b> ( <i>Room CO 1</i> )
	<p><u>KEYNOTE SPEAKERS (2):</u></p> <p><b>Quantify What Cannot Be Measured: Small Molecule Fluxes Through Metabolic Networks.</b> U. Sauer (ETHZ-CH)</p> <p><b>Biology As Reverse Engineering: A Few Examples</b> S. Leibler (The Rockefeller University-USA)</p>
<b>16:20-17:15</b>	<b>PLENARY SESSION</b> ( <i>Room CO 1</i> )
	<p><b>AWARDS:</b></p> <p><b>The 2008 Friedrich Miescher Award.</b> Chair: D. Burger (Univ. of Geneva-CH)</p> <p><b>Presentation of the Poster Awards</b> (ssAHE, BIO, "Engineering meets Biology...", "...Bio-Imaging", PHA, PHY, SSO, ZMG)</p>
	<b>END OF MEETING</b>

<b>ssAHE</b>	Swiss Society for Anatomy, Histology and Embryology
<b>BIO</b>	Swiss Society for Biochemistry
<b>PHA</b>	Swiss Society for Pharmacology and Toxicology
<b>PHY</b>	Swiss Physiological Society
<b>SGV</b>	Swiss Laboratory Animal Science Association
<b>SSO-SGO</b>	Swiss Society for Oncology
<b>STSBC</b>	Società Ticinese della Scienze Biomediche e Chimiche
<b>ZMG</b>	Swiss Society for Cell Biology, Molecular Biology and Genetics

# Plenary Lectures

Wednesday February 6, 2008	
9:30-10:20	<b>OPENING PLENARY SESSION (Building SG - Room SG 1)</b>
	<p><u>KEYNOTE SPEAKER (1):</u>  <b>Evolution Of Cooperation In Ant And Robot Societies.</b> L. Keller (UNIL- CH)</p>
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	<p><u>KEYNOTE SPEAKERS (2):</u>  <b>Quantify What Cannot Be Measured: Small Molecule Fluxes Through Metabolic Networks.</b> U. Sauer (ETHZ-CH)  <b>Biology As Reverse Engineering: A Few Examples</b> S. Leibler (The Rockefeller University-USA)</p>
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	<p><b>AWARDS:</b>  <b>The 2008 Friedrich Miescher Award.</b> Chair: D. Burger (Univ. of Geneva-CH)  <b>Presentation of the Poster Awards</b> (ssAHE, BIO, "Engineering meets Biology...", "...BioImaging", PHA, PHY, SSO, ZMG)</p>

# Symposia Overview

Wednesday February 6, 2008	
11:00-13:00	<b>CONCURRENT SYMPOSIA (4) (Building CO)</b>
	<p><u>SYMPOSIUM 1:</u> <b>ZMG - Genes And Development</b> (Room CO 1)</p> <p><u>SYMPOSIUM 2:</u> <b>PHA - Small Molecules-Signaling Pathways: Cell Programming And Therapeutic Interventions</b> (Room CO 3)</p> <p><u>SYMPOSIUM 3:</u> <b>STSBC - Stem Cells: From Bench To Bedside</b> (Room CO 011)</p> <p><u>SYMPOSIUM 4:</u> <b>Climbing To New Perspectives For Biomedical Research With Bio-Imaging</b> (Room CO 2)</p>
16:30-18:30	<b>CONCURRENT SYMPOSIA (3) (Building CO)</b>
	<p><u>SYMPOSIUM 5:</u> <b>PHY - Cardiac Tissue Engineering</b> (Room CO 2)</p> <p><u>SYMPOSIUM 6:</u> <b>Engineering Meets Biology: Analysis And Design From The Molecule Up</b> (Room CO 1)</p> <p><u>SYMPOSIUM 7:</u> <b>ssAHE - Contribution Of New Technologies To Combine Structural And Functional Analysis In Cellular Imaging</b> (Room CO 3)</p>

Thursday February 7, 2008	
11:00-13:00	<b>CONCURRENT SYMPOSIA (3) (Building CO)</b>
	<p><u>SYMPOSIUM 8:</u> <b>SSO: Imaging Cancer For Better Therapy</b> (Room CO 2)</p> <p><u>SYMPOSIUM 9:</u> <b>SGV: Revision Of The Animal Protection Ordinance : What Are The Consequences For Research And Animal House Management?</b> (Room CO 3)</p> <p><u>SYMPOSIUM 10:</u> <b>BIO: Structure And Function Of Cellular Nanomachines</b> (Room CO 1)</p>

<b>ssAHE</b>	Swiss Society for Anatomy, Histology and Embryology
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<b>SSO-SGO</b>	Swiss Society for Oncology
<b>STSBC</b>	Società Ticinese della Scienze Biomediche e Chimiche
<b>ZMG</b>	Swiss Society for Cell Biology, Molecular Biology and Genetics

# Symposia Detailed Program

Wednesday February 6, 2008 (Building C0)	
11:00-13:00	<p><b><u>SYMPOSIUM 1: ZMG : Genes And Development</u></b> (Room CO 1)</p> <p><b>Chairs: F. Karch</b> (Univ. of Geneva-CH) &amp; <b>P. Linder</b> (Univ. of Geneva-CH)</p> <p><b>Heterotrimeric G Proteins And Dynein Promote Spindle Positioning In C. Elegans.</b> M. Gotta (Univ. of Geneva-CH)</p> <p><b>Flies With Heart Diseases.</b> R. Bodmer (Burnham Inst. for Medical Research, La Jolla-USA).</p> <p><b>Breaking Down The Signature Common To Hundreds Of Drosophila Insulators Identifies Nucleosome-Associated Cis-Regulatory Elements Controlling The Cell-cycle.</b> O. Cuvier (Institut de Génétique humaine, Montpellier, FR).</p> <p><b>Species Selectivity Of Mixed Lineage Leukemia/Trithorax And HCF Proteolytic Maturation Pathways.</b> F. Capotosti (UNIL-CH)</p> <p><b>Germ Plasm Localization in the Zebrafish Oocyte.</b> R. Dosch (Univ. Of Geneva)</p> <p><b>Differential Display of DNA-Binding Proteins Reveals Heat Shock Factor 1 as a Circadian Transcription Factor.</b> H. Reinke (Univ. Of Geneva-CH)</p>
	<p><b><u>SYMPOSIUM 2: PHA: Small Molecules-Signaling Pathways: Cell Programming And Therapeutic Interventions</u></b> (Room CO 3)</p> <p><b>Chair: L. Scappoza</b> (Univ. of Geneva-CH)</p> <p><b>Screening For Small Molecules To Guide Neural Differentiation Of Embryonic Stem Cells.</b> K.-H. Krause (University of Geneva-CH)</p> <p><b>Proteomics-Based Strategies In Drug Discovery.</b> G. Drewes (Discovery Technologies Cellzome AG Heidelberg-DE)</p> <p><b>Dietary Phytoestrogens Activate AMPactivated Protein Kinase With Improvement in Lipid And Glucose Metabolism.</b> C. R. Cederroth (Univ. Of Geneva-CH)</p> <p><b>Myofibroblasts And The Mechanics Of Tissue Repair: Facing The Enemy And Making It Companion.</b> B. Hinz (EPFL-CH)</p> <p><b>Novel, Highly Potent, Fully Recombinant Chemokine Analogues: Promising Candidate Medicines For HIV Prevention.</b> O. Hartley (Univ. Of Geneva-CH)</p>
	<p><b><u>SYMPOSIUM 3: STSBC: Stem Cells: From Bench To Bedside</u></b> (Room CO 011)</p> <p><b>Chairs: M. Manz</b> (IRB, Bellinzona-CH) &amp; <b>G. Martinetti</b> (ICM, Bellinzona-CH)</p> <p><b>If I Can Stop One Heart From Breaking.</b> S. Bardelli (Harvard Univ.-USA)</p> <p><b>Clinical Application Of Bone Marrow-Derived Stem Cells In Acute Myocardial Infarction. Gmp Cell Processing In The Swiss-Ami Clinical Trial.</b> G. Astori (Cell Therapy Unit, Cardiocentro Ticino-CH)</p> <p><b>Adipose Tissue As Source Of Stem Cells For Regenerative Medecine. The Differentiation Potential Of Adipocyte-Derived Adult Mesenchymal Stem Cells.</b> V. Albertini (Swiss Stem Cells Bank, Cardiocentro Ticino-CH)</p> <p><b>In Silico Target Discovery In Neural Stem Cell Differentiation.</b> Y. Westermaier (Univ. Of Geneva-CH)</p> <p><b>Exploring Stem Cell Engraftment.</b> N. Grasset (EPFL-CH)</p> <p><b>A Novel Culture Device Expands Mesenchymal Stem Cell Cultures By Preserving The Proliferative Naïve Stem Cell Phenotype.</b> H. Majd (EPFL-CH)</p>

Wednesday February 6, 2008 (Building C0)	
	<b>SYMPOSIUM 4: Climbing To New Perspectives For Biomedical Research With Bio-Imaging</b> (Room CO 2)
	<p><b>Chair: R. Gruetter</b> (UNIL/EPFL/UNIGE-CH)</p> <p><b>Optical Projection Tomography.</b> U. Ahlgren (Umea Univ.-SE)</p> <p><b>Optical Coherence Tomography.</b> T. Lasser (EPFL-CH)</p> <p><b>Integrated Sensors For Implantable Imaging And Therapy.</b> E. Charbon (EPFL-CH)</p> <p><b>Brain Connectivity Analysis By Diffusion MRI.</b> J.-P. Thiran (EPFL-CH)</p> <p><b>MRI Detection And Imaging Of Hyperpolarized 6-Lithium In The Rat Brain In Vivo.</b> R. van Heeswijk (EPFL-CH)</p> <p><b>In Vivo 1H NMR Measurement Of Glycine In Human Brain at 7 Tesla.</b> G. Gambarota (EPFL-CH)</p> <p><b>MRI/MRS Of Ischemic Evolution In Mouse Brain at 14.1 T</b> H. Lei (EPFL-CH)</p>
16:30-18:30	<b>SYMPOSIUM 5: PHY: Cardiac Tissue Engineering</b> (Room CO 2)
	<p><b>Chairs: A. G. Kleber</b> (Univ. of Bern-CH) &amp; <b>E. Niggli</b> (Univ. of Bern-CH)</p> <p><b>Cell Engineering For The Analysis Of Electrical Propagation And Intercellular Communication</b> A. G. Kléber (Univ. Bern-CH)</p> <p><b>Engineered Boundary Conditions Direct Cardiac Myogenesis And Contractility.</b> A. W. Feinberg (Harvard Univ.-USA)</p> <p><b>Engineering A Cardiac Pacemaker</b> M. R. Rosen (Columbia Univ.-USA)</p>
	<b>SYMPOSIUM 6: Engineering Meets Biology: Analysis &amp; Design From The Molecule Up</b> (Room CO 1)
	<p><b>Chair: J. Hubbell</b> (EPFL-CH)</p> <p><b>Engineering The Stem Cell Niche.</b> P. Zandstra (Univ. of Toronto-CA)</p> <p><b>Reverse Engineering Of Metazoan Gene Regulatory Networks.</b> B. Deplancke (EPFL-CH)</p> <p><b>Molecular Modeling Of Bacterial Sensing Machines.</b> M. dal Peraro (EPFL-CH)</p> <p><b>Surface Engineered Materials To Control Fate Decisions Of Hematopoetic Progenitors In Vitro.</b> C. Werner (Max Bergmann Center of Biomaterials Dresden-DE)</p> <p><b>Large-Scale Precision Measurements Of Biological Network Components.</b> S. Maerkl (EPFL-CH)</p> <p><b>Designed Ankyrin Repeat Proteins As A Novel Tool For Targeting Eukaryotic Protein Kinases.</b> L. Kummer (Univ. of Zuerich-CH)</p> <p><b>Spatial Mapping Of The Neurite And Soma Proteomes Reveals A Functional Cdc42/Rac Regulatory Network.</b> O. Pertz (Univ. of Basel-CH)</p>

Wednesday February 6, 2008 (Building C0)

**SYMPOSIUM 7: ssAHE: Contribution Of New Technologies To Combine Structural And Functional Analysis In Cellular Imaging (Room CO 3)**

**Chairs : J.-P. Hornung & J. Dubochet** (Univ. of Lausanne-CH)

**Wave-Front Engineering Microscopy To Reproduce Complex Mechanical Or Chemical Environments Of Living Cells.** V. Emiliani (Univ. Paris Descartes-FR)

**CEMOVIS: Will The Swiss Product Become A World Winner?** J. Dubochet (UNIL-CH)

**Revealing The Nano-Mechanical Properties Of Biological Samples By Atomic Force Microscopy.** S. Kasas (EPFL-UNIL-CH)

**A New Protein Tag For Multi-Protein Labeling In Living Cells.** A. Gautier (EPFL-CH)

**Towards Probing Protein Interactions In Living Yeast With Fluorescence Cross-Correlation Spectroscopy (FCCS)** S. Trautmann (ETHZ-CH)

Thursday February 7, 2008 (Building C0)

11:00-13:00

**SYMPOSIUM 8: SSO: Imaging Cancer For Better Therapy** (Room CO 2)

**Chairs: H. Walt** (University Hospital Zurich-CH) & **C. Ruegg** (UNIL-CH)

**Assessing Molecular Properties Of Tumors Using Multimodal Imaging Techniques.** M. Rudin (Zurich-CH)

**Hypericin: Nature's Recipe For Imaging Cancer.** P. de Witte (Leuven-BE)

**Hybrid PET-CT in Oncology.** O. Ratib (Geneva-CH)

**Virtual Reality Simulation Of Uterine Pathologies For Surgical Training.** M. Bajka (Zurich-CH)

**Protein-Binding-Microarrays In Cancer Diagnosis.** T. Egenger-Kuhn (UNIL-CH)

**Efficient Targeting Of Melanoma With Dual PI3K/mTOR Inhibitors.** R. Marone (Univ. Of Basel-CH)

**SYMPOSIUM 9: SGV: Revision Of The Animal Protection Ordinance : What Are The Consequences For Research And Animal House Management?** (Room CO 3)

**Chairs : M. Gyger** (EPFL-CH) & **B. M. Riederer** (Univ. of Lausanne-CH):

**Revision Of The Animal Protection Ordinance, What Are The Main Changes?** M. Lehmann (FVO, Bern-CH)

**The Point Of View Of Academic Institutions, With Particular Emphasis On GM Animal Breeding.** K. Buerki (LTK, Zurich-CH)

**Animal Experimentation Request Procedure Goes Digital: E-Animal Experimentation.** M. Lehmann (FVO, Bern-CH)

**Responsibility Aspects Related to the Animal Experiment -Discussed With A Focus On Specific Criminal Law Issues Within The Animal Protection Law.** M. Tinner (CH)

**SYMPOSIUM 10: BIO: Structure And Function Of Cellular Nanomachines** (Room CO 1)

**Chair : M. Grütter** (Biochemisches Institut, Zurich-CH)

**Springs, tethers and switchblades: mechanistic insights into the functioning of large macromolecular assemblies involved in protein and fatty acid synthesis.** N. Ban (ETH Zurich-CH)

**Integrated Structural Biology Of Gene Transcription.** P. Cramer (Univ. of Munich, DE)

**Backbone Trace Of GroEL From Single Particle CryoEM.** W. Chiu (Baylor College of Medicine, Houston-USA)

**The Nucleoporin Nup153 And Its Implication In Selective Gating By The Nuclear Pore Complex.** B. Fahrenkrog (Biozentrum Univ. of Basel-CH)