

The Biomedical & Life Sciences Collection

Over 2,500 lectures by leading world experts

About the revolution in 'digital':

'Digital' is powering something of a revolution in university education. Everyone wants high quality video (not just recordings of live lectures and seminars). Students want it, not as a substitute for 'contact hours' but in addition to them. However, high quality video is expensive to produce in both time and money. Clearly there is a challenge here for universities as they seek ways to meet expectations in a cost-effective manner. Access to [The Biomedical & Life Sciences Collection](#) provides a solution as it spreads the cost among many institutions worldwide.

Introduction:

[The Biomedical & Life Sciences Collection](#) contains over 2,500 specially commissioned lectures, presented by world leading experts, including Nobel, Lasker and Breakthrough prize winners.

In addition to meeting the needs of researchers, the lectures support blended, distance, team and flipped classroom programmes and self-motivated learning. Topics covered range from basic science to therapeutic intervention, from the level of the single molecule to entire populations. The complete collection is available at <https://hstalks.com/biosci/>

To date, twelve Nobel Laureates have contributed lectures to the collection:

1. Prof. James Allison - "Checkpoint blockade in cancer immunotherapy"
2. Prof. Bruce Beutler - "Innate immune sensing and response"
3. Prof. Sir Martin Evans - "Mouse Embryonic Stem Cells"
4. Prof. Edmond Fischer - "Phosphorylase and the origin of reversible protein phosphorylation"
5. Prof. Joachim Frank - "Structural insights into aminoacyl-tRNA delivery by EF-Tu and translocation by EF-G"
6. Prof. Jeffrey C. Hall - "Cracking the case of circadian rhythms by Drosophila genetics"
7. Prof. Jules Hoffmann - "The anti-microbial defense of Drosophila: a paradigm for innate immunity"
8. Prof. Roger Kornberg - "Chromatin and Transcription"
9. Prof. Venkatraman Ramakrishnan - "Structural insights into decoding of mRNA by the ribosome"
10. Prof. Ralph Steinman - "Dendritic cells: linking innate to different forms of adaptive immunity"
11. Prof. Thomas Steitz - "The structural basis for how the large ribosomal subunit catalyses peptide bond formation"
12. Prof. Sir Gregory Winter - "Antibodies by protein engineering"

Please see Appendix 1 for a listing of further examples of lectures

How HSTalks is used in academia:

The HSTalks collections are not a substitute for what academic teaching staff organize and deliver but rather a resource to be used to enhance the learning experience. The collection's range and variety supports, complements, extends and enriches education.

All talks or any extract from a talk is easily integrated and embedded within your Virtual Learning Environment and all the slides can be printed to support note taking. The collection supports blended, distance, team and flipped classroom programmes and self-motivated learning.

Below are some of the most common ways in which the collection is used regularly by programme directors, teaching staff, graduate students, postdocs and undergraduate students in academic institutions:

- Embedding in Online Learning Systems as part of courses, in preparation for a class or as additional learning material following lectures.
- In blended, distance, team learning and flipped classroom programmes (where students access lectures at home and then attend the university for discussions, workshops, tutorials, seminars and supervised exercises).
- Material for small-group and individual-student courses which a university could not otherwise provide.
- To fill gaps in departmental expertise. No single institution can retain the number and range of leading experts represented in the collection.
- Ensuring that researchers, teachers and students have access to a wide range of expert knowledge both in their own and other fields.
- Effectively acquiring knowledge when starting a new project, and developing a deeper understanding of the context within which an ongoing project is being undertaken.
- Reducing the need to travel to and attend international conferences and preparing for such conferences when attendance is appropriate. Students, in particular, have difficulty in attending international conferences that would enable them to listen to talks by a wide range of world-leading authorities.
- To pursue self-motivated enquiry. Remember: with talks in the collection, world leading experts can be made to repeat any part of their talk as many times as required until the attendee feels they have gained a full understanding.

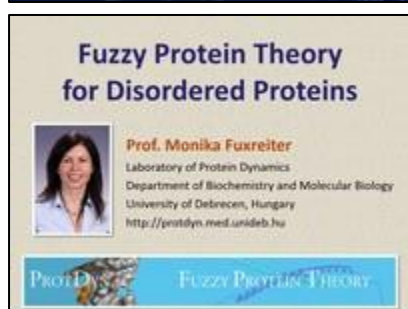
Appendix 1: Examples of lectures

Biochemistry



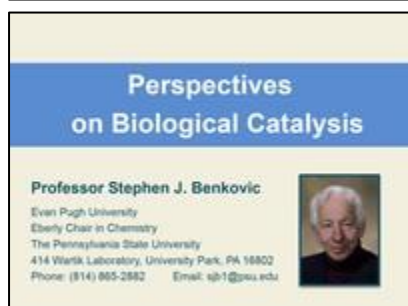
[Designing proteins with life sustaining activities](#)

Prof. Michael Hecht – Princeton University, USA



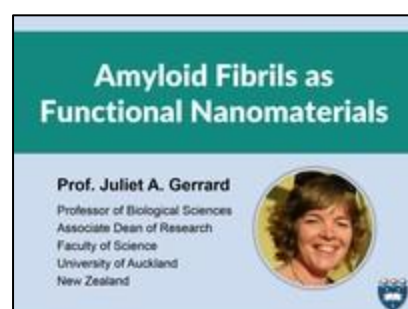
[Fuzzy protein theory for disordered proteins](#)

Prof. Monika Fuxreiter – University of Debrecen, Hungary



[Perspectives on biological catalysis](#)

Prof. Stephen Benkovic – The Pennsylvania State University, USA



[Amyloid fibrils as functional nanomaterials](#)

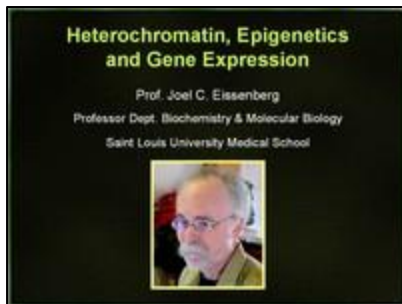
Prof. Juliet Gerrard – University of Auckland, New Zealand



[Mitochondrial production of reactive oxygen species 1](#)

Prof. Martin Brand – Buck Institute, USA

Genetics & Epigenetics



[Heterochromatin, epigenetics and gene expression](#)

Prof. Joel C. Eissenberg – Saint Louis University, USA



[The Silent Revolution: an Introduction to Gene Regulation by microRNAs](#)

Dr. Frank Slack – Director of the iRM, Harvard Medical School, USA



[Structure, evolution and dynamics of gene regulatory networks](#)

Dr. M. Madan Babu – MRC Laboratory of Molecular Biology, UK



[The molecular mechanism of X chromosome inactivation](#)

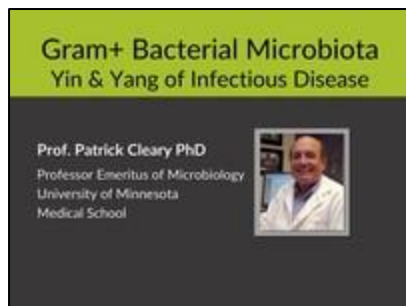
Prof. Neil Brockdorff – University of Oxford, UK



[Gene-drives and active genetics: introduction to gene-drives and their implications for health and society](#)

Prof. Ethan Bier – University of California, San Diego, USA

Microbiology



[Gram+ bacterial microbiota - Yin & Yang of infectious disease](#)

Prof. P. Patrick Cleary – University of Minnesota, USA



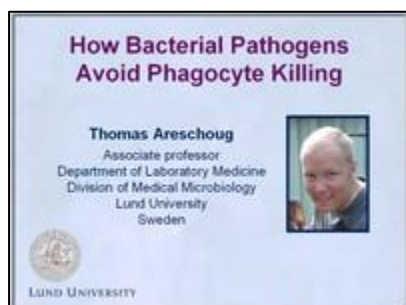
[An Introduction to Retroviruses: Replication Strategy and Genetics](#)

Dr. Jonathan Stoye – Francis Crick Institute, UK



[Introduction to microbiota: agents for health and disease](#)

Prof. B. Brett Finlay – University of British Columbia, Canada



[How bacterial pathogens avoid phagocyte killing](#)

Dr. Thomas Areschoug – Lund University, Sweden



[National and international surveillance of antibiotic resistance](#)

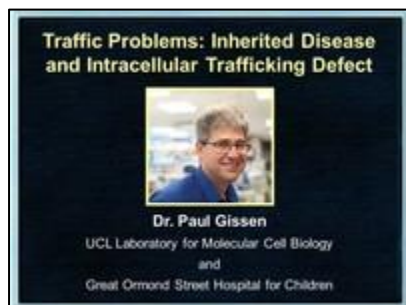
Prof. David Livermore – Public Health England's Antibiotic Resistance Monitoring and Reference Laboratory, UK

Cell Biology



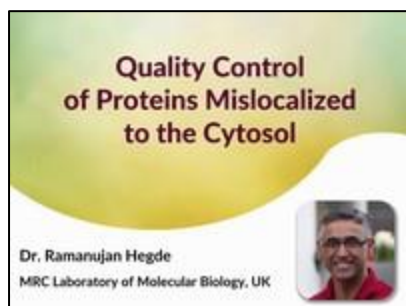
[The ERK1/2 MAPK cascade](#)

Prof. Melanie H. Cobb – University of Texas Southwestern Medical Center at Dallas, USA



[Traffic problems: inherited disease and intracellular trafficking defect](#)

Dr. Paul Gissen – University College London, UK



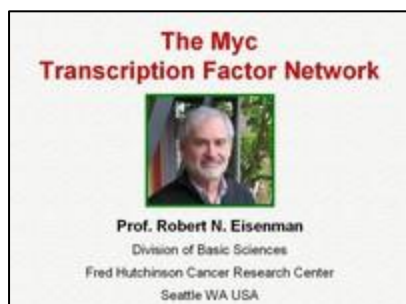
[Quality control of proteins mislocalized to the cytosol](#)

Dr. Ramanujan Hegde – MRC Laboratory of Molecular Biology, UK



[DNA damage, mutations and aging 1](#)

Prof. Jan Vijg – Albert Einstein College of Medicine, USA



[The Myc transcription factor network](#)

Prof. Robert N. Eisenman – Fred Hutchinson Cancer Research Center, USA

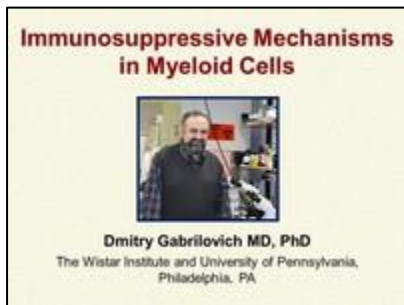
Immunology



[Priming of T cell responses](#)

Prof. Victor Appay – INSERM, France

Dr. Francesco Nicoli – Universities of Ferrara and Padua, Italy



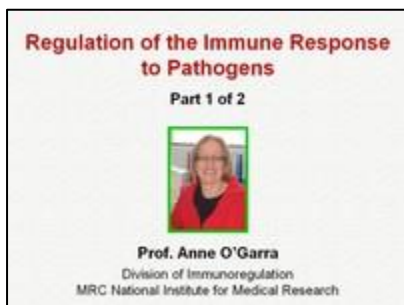
[Immunosuppressive mechanisms in myeloid cells](#)

Prof. Dmitry Gabrilovich – University of Pennsylvania, USA



[The classical pathway of complement](#)

Prof. Mohamed R. Doha – Leiden University Medical Center, Netherlands



[Regulation of the immune response to pathogens](#)

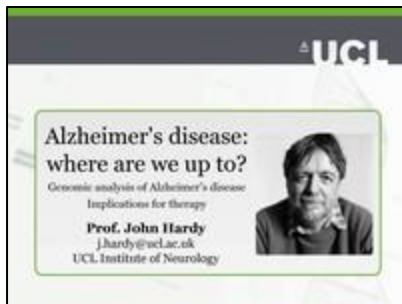
Prof. Anne O'Garra – National Institute for Medical Research, London, UK



[Future directions for vaccine discovery](#)

Dr. Chris Wilson – Bill and Melinda Gates Foundation, USA

Neuroscience



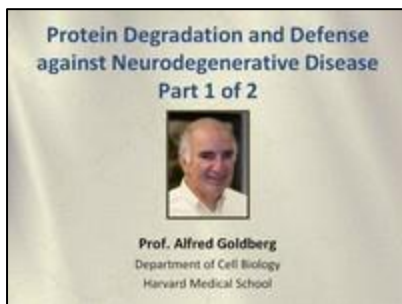
[Alzheimer's disease: where are we up to?](#)

Prof. John Hardy – Institute of Neurology, University College London, UK



[AMPA-receptors and fast synaptic transmission in the brain](#)

Prof. Stuart Cull-Candy – University College London, UK



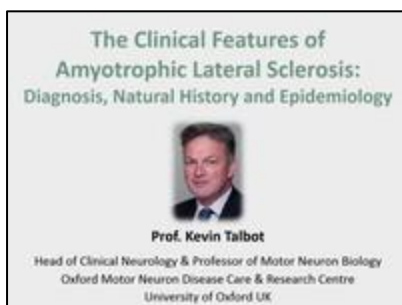
[Protein degradation and defense against neurodegenerative disease](#)

Prof. Alfred Goldberg – Harvard Medical School, USA



[Parkinson's at 200 years: an update on Parkinson's research in 2017](#)

Prof. Patrick A. Lewis – University of Reading, UK



[The clinical features of amyotrophic lateral sclerosis: diagnosis, natural history and epidemiology](#)

Prof. Kevin Talbot – University of Oxford, UK

Omics & Systems Biology



[Systems biology of the cell cycle](#)

Prof. Bela Novak – University of Oxford, UK



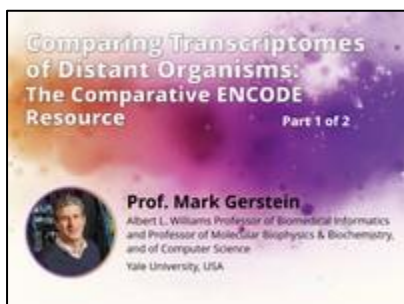
[A systems approach to implementation of personalized cancer therapy](#)

Prof. Gordon B. Mills – MD Anderson Cancer Center, USA



[Interactome networks and human disease](#)

Prof. Marc Vidal – Harvard Medical School, USA



[Comparing transcriptomes of distant organisms: the comparative ENCODE resource 1](#)

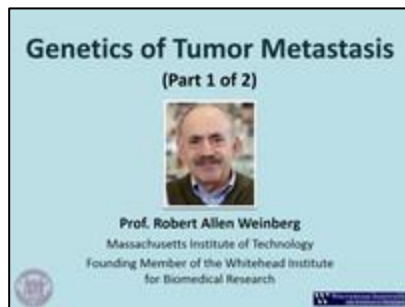
Prof. Mark Gerstein – Yale University, USA



[Impact of systems biology on metabolic engineering](#)

Prof. Jens Nielsen – Chalmers University of Technology, Sweden

Cancer



Genetics of tumor metastasis

Prof. Robert Weinberg – Whitehead Institute for Biomedical Research, USA



Immune checkpoint blockade in melanoma

Dr. Elizabeth Buchbinder – Harvard Medical School, USA



Chromosome translocations and cancer

Prof. Felix Mitelman – Lund University, Sweden



Functional cancer genomics

Prof. Roderick Beijersbergen – Netherlands Cancer Institute, The Netherlands



Pharmacogenomics in cancer therapy

Prof. Sharon Marsh – University of Alberta, Canada

Pharmaceutical Sciences



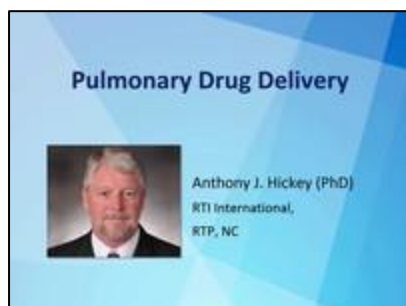
[Rules and filters and their impact on success in chemical biology and drug discovery](#)

Dr. Christopher Lipinski – Melior Discovery Inc., USA



[Structure-based drug design](#)

Dr. Nathan Brown – Institute of Cancer Research, UK



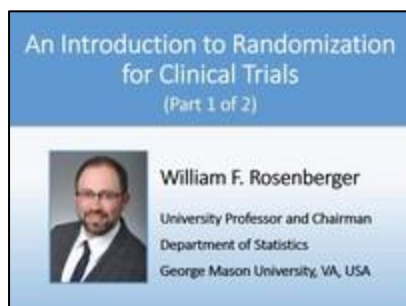
[Pulmonary drug delivery](#)

Prof. Anthony J. Hickey – RTI International, USA



[Fragment-based lead discovery](#)

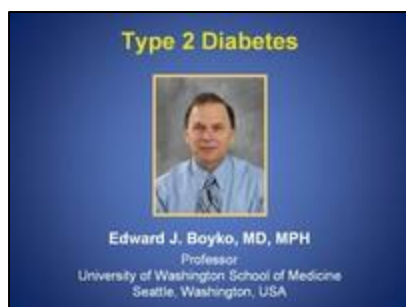
Dr. Daniel A. Erlanson – Carmot Therapeutics, Inc., USA



[An introduction to randomization for clinical trials 1](#)

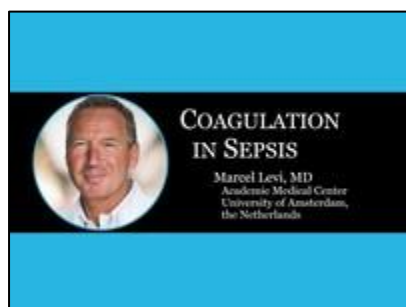
Prof. William Rosenberger – George Mason University, USA

Clinical Medicine



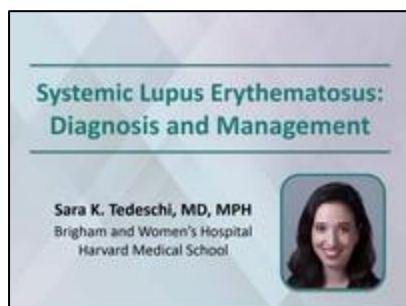
Type 2 diabetes

Prof. Edward Boyko – University of Washington, USA



Coagulation in sepsis

Prof. Marcel Levi – University of Amsterdam, Netherlands



Systemic lupus erythematosus: diagnosis and management

Dr. Sara K. Tedeschi – Harvard Medical School, USA



Post-resuscitation syndrome after cardiac arrest -

Protecting the Brain

Prof. David Seder – Tufts University School of Medicine, USA



Assessment of renal function

Dr. Jochen Raimann – Renal Research Institute, USA

Diseases, Disorders, & Treatments



[Inflammatory bowel disease](#)

Prof. Ole Haagen Nielsen – University of Copenhagen, Denmark



[CLL: novel prognostics, and updates on therapy 1](#)

Prof. Jennifer R. Brown – Harvard Medical School, USA



[NASH: Update on diagnostics and therapy](#)

Dr. Arun J. Sanyal – Virginia Commonwealth University, School of Medicine, USA



[Renal complications of sickle cell disease](#)

Dr. Claire Sharpe – King's College London, UK



[Psoriasis](#)

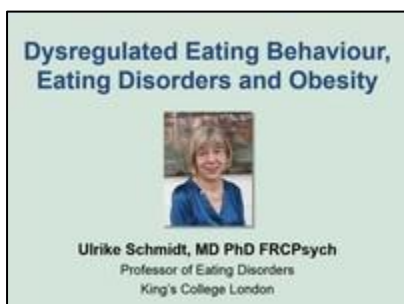
Prof. Chris Griffiths – University of Manchester, UK

Metabolism & Nutrition



[Obesity management: lifestyle and bariatric surgery](#)

Prof. John Wilding – University of Liverpool, UK



[Dysregulated eating behaviour, eating disorders and obesity](#)

Prof. Ulrike Schmidt – King's College London



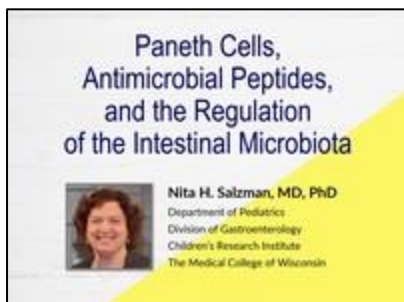
[Metabolic communication in development and control of obesity](#)

Prof. Elaine Holmes – Imperial College London, UK



[Obesity pharmacotherapy: options and uses in clinical practice](#)

Prof. Scott Kahan – Johns Hopkins University Bloomberg School of Public Health, USA



[Paneth cells, antimicrobial peptides and the regulation of the intestinal microbiota](#)

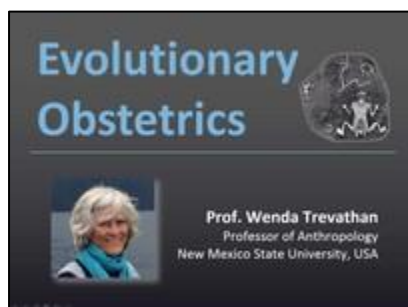
Dr. Nita Salzman – Medical College of Wisconsin, USA

Reproduction & Development



[Setting the second stage: the evolution of menopause & post-reproductive life](#)

Prof. Lynnette Sievert – University of Massachusetts Amherst, USA



[Evolutionary Obstetrics](#)

Prof. Wenda Trevathan – New Mexico State University, USA



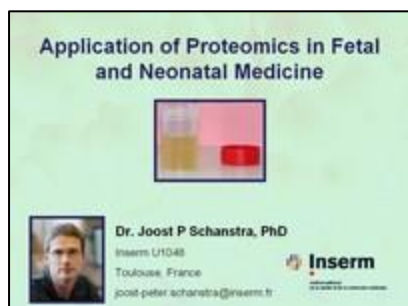
[Left-Right Asymmetry in Embryonic Development: How epigenetic, biophysical forces and gene activity interplay to determine a major embryonic axis](#)

Prof. Michael Levin – Biology Department, TCRDB, Tufts University, USA



[Barrier mechanisms in the developing brain: protection or vulnerability?](#)

Prof. Norman Saunders – University of Melbourne, Australia



[Application of proteomics in fetal and neonatal medicine](#)

Dr. Joost P. Schanstra – INSERM, Toulouse, France

Agriculture & Environmental Sciences



[Agricultural genetics for food security](#)

Prof. Robert Henry – University of Queensland, Australia



[Why is the world green? Top-down and bottom-up controls on ecosystems](#)

Prof. Jonathan Shurin – University of California-San Diego, USA



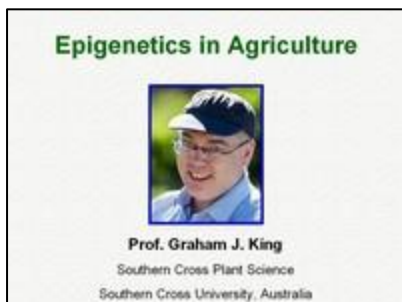
[Animal behavioural genetics](#)

Prof. Temple Grandin – Colorado State University, USA



[Macroecology](#)

Dr. Natalie Cooper – Natural History Museum, London, UK



[Epigenetics in agriculture](#)

Prof. Graham King – Southern Cross University, Australia

Methods



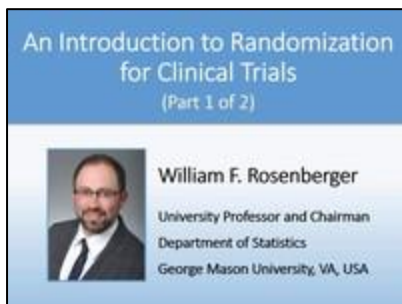
[Modern production of laboratory animals](#)

Dr. Martin Toft – Adlast, DK



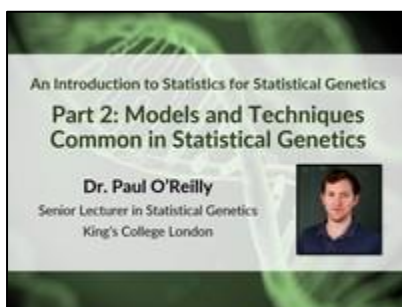
[Statistical techniques in human population genetics](#)

Dr. Garrett Hellenthal – University College London, UK



[An introduction to randomization for clinical trials 1](#)

Prof. William Rosenberger – George Mason University, USA



[An introduction to statistics for statistical genetics: models and techniques common in statistical genetics](#)

Dr. Paul O'Reilly – King's College London, UK



[Legal and ethical issues in uses of stored tissue in human subjects research](#)

Ms. Gail Javitt – Johns Hopkins University, USA