

**Franco Foundation seminar  
at the Academia Belgica in Rome**

**"Deciphering the molecular architecture of complex traits"**

**Venue:** Academia Belgica, 8 Via Omero, 00197 Roma (Lazio), Italy

(<http://www.academiabelgica.it/>)

**Dates:** 26-28<sup>th</sup> September 2010

**Background information:** Recent advances in genome exploration technology now allow for the systematic dissection of the molecular architecture of complex phenotypes. Genome wide association studies, in particular, have uncovered hundreds of loci influencing inherited predisposition to tens of common diseases. Yet and despite this remarkable progress, the major fraction of the heritability remains unaccounted for most traits/diseases. The aim of this seminar is to discuss hypotheses about the origin of the missing heritability as well as experimental strategies to uncover it.

**Format:** The number of participants is limited to 50, and includes a majority of leading experts in the field. The program is composed of eight sessions each comprising (i) 2-3 talks focusing whenever possible on unpublished data, and (ii) a discussion animated by a moderator. Moderators are expected to frame (they can use part of their 30 min as talk) and lead the discussions of the session to make these as interactive and informative as possible.

**Lodging:** Private, pre-booked rooms in NH Vittorio Veneto Hotel, Corso d'Italia 1, 00198 Rome (10 min walk from Academia Belgica)

**Provisional program:**

*Saturday (25<sup>th</sup> September)*

Arrival at Academia Belgica, Rome

*Sunday (26<sup>th</sup> September)*

10:00 – 12:00: Visit of the Crypta Balbi guided by Prof. Jan Gadeyne

15:00 – 17:00: Visit to the Galleria Borghese

*Evening: free*

*Monday (27<sup>th</sup> September)*

Welcome address

08:30 – 08:45: Baroness Janine Delruelle, representing the Board of Directors of the Francqui Foundation.

Session I: Molecular architecture of complex traits: What have we learned so far from genome-wide scans - 1?

09:00 – 09:30: Lessons from GWAS in human – *Marc McCarthy*

09:30 – 10:00: Lessons from rodent models – *Jonathan Flint*

10:00 – 10:30: Discussion – Moderator: *Aarno Palotie*

*Coffee break*

Session II: Molecular architecture of complex traits: What have we learned so far from genome-wide scans - 2?

10:50 – 11:20: Lessons from domestic animals – *Leif Andersson*

11:20 – 11:50: Lessons from plants – *Magnus Nordborg*

11:50 – 12:20: Lessons from drosophila – *Trudy MacKay*

12:20 – 12:50: Discussion – Moderator: *Ed Buckler*

*Lunch break*

Session III: How much of the heritability do we really miss?

14:00 – 14:30: Estimating trait and explained heritability: methods and precision – *Bill Hill*

14:30 – 15:00: Effect of incomplete LD between SNP markers and causative variants on estimates of genetic effects - *Bruce Weir*

15:00 – 15:30: Discussion – Moderator: *Peter Donnelly*

*Coffee break*

Session III: Quasi-infinitesimal architecture of complex traits

15:50 – 16:20: Evidence for a quasi-infinitesimal architecture of complex traits: human data – *Peter Visscher*

16:20 – 16:50: Genomic selection: in support of a quasi-infinitesimal architecture of complex traits – *Mike Goddard*

16:50 – 17:20: Genetic architecture of skin and eye color in an

admixed Afro-European population - *Greg Barsh*

17:20 – 17:50: Discussion – Moderator: *Manolis Dermitzakis*

*Walking dinner upon invitation by Prof. Walter Geerts, Director of the Academia Belgica, and his wife.*

***Tuesday (28<sup>th</sup> September)***

Session IV: Rare and structural variants

08:00 - 08:30: Contribution of rare variants to the genetic variation of complex traits: human data – *to be announced*

08:30 - 09:00: Contribution of rare coding variants in positional candidates from GWAS to susceptibility to Crohn's disease – *Michel Georges*

09:00 – 09:30: Contribution of structural variants to the genetic variation of complex traits – *Xavier Estivill*

09:30 – 10:00: Discussion – Moderator: *Walter Bodmer*

*Coffee break*

Session V: GxG interactions

10:30 - 11:00: Contribution of epistatic interactions to the genetic variation of complex traits – *Orjan Carlborg*

11:00 – 11:30: Modifier genes and disease susceptibility – *Nico Katsanis*

11:30 – 12:00: Fractal genetics & transgenerational effects – *Joe Nadeau*

12:00 – 12:30: Discussion – Moderator: *Chris Haley*

*Lunch break*

Session VI: GxE interactions & epigenetic effects

13:30 – 14:00: Decanalization and the origin of complex disease: *Greg Gibson*

14:00 – 14:30: Contribution of parent-of-origin effects to the genetic variation of complex traits: *James Cheverud*

14:30 – 15:00: Epigenetic inheritance and the missing heritability problem – *Montgomery Slatkin*

15:00 – 15:30: Discussion – Moderator: *Andrew Feinberg*

*Coffee break*

Session VII: Non-conventional modes of inheritance

15:50 – 16:20: RNA mediated non-Mendelian inheritance – *Minoo Rassoulzadegan*

16:20 – 16:50: Paramutations: lessons from maize – *Vicki Chandler*

16:50 – 17:20: Selective chromatid segregation - *Amar Klar*

17:20 – 17:50 – Discussion – Moderator : *Eric Miska*

Guest lecture

17:50 – 18:20 – *Luigi Cavalli-Sforza*

*Reception at the Belgian Embassy in Rome upon invitation by the Ambassador Jan De Bock and his wife.*

***Wednesday (29<sup>th</sup> September)***

Departure

***Invited participants***

Leif Andersson  
Greg Barsh  
Walter Bodmer  
Ed Buckler  
Orjan Carlborg  
Luigi Cavalli-Sforza  
Vicky Chandler  
James Cheverud  
Manolis Dermitzakis  
Peter Donnelly  
Xavier Estivill  
Laurent Excoffier  
Andrew Feinberg  
Jonathan Flint  
Louisa Flintoft  
Greg Gibson  
Mike Goddard  
Chris Haley  
Bill Hill  
Nico Katsanis  
Amar Klar  
Mark Lathrop  
Trudy MacKay  
Marc McCarty  
Eric Miska  
Joe Nadeau  
Magnus Nordborg  
Aarno Palotie  
Bruce Weir  
Minoo Rassoulzadegan  
Magdalena Skipper  
Montgomery Slatkin  
Peter Visscher  
Kyle Vogan