

**Epigenetic regulation of endocrine therapy resistance in breast cancer:
A systems medicine approach to Predict treatment outcome**



EU H2020 Marie Skłodowska Curie
Innovative Training Network



Post-graduate EU H2020 EpiPredict workshop

UvA/SILS-VU/AIMMS-BioSB-course

2 February - 4 February 2016 Amsterdam

Modelling Epigenetics

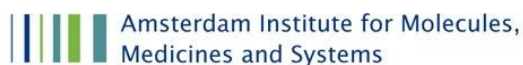
Organized and funded by: EU H2020 MSCA-ETN EpiPredict, also UvA/SILS, AIMMS, BioSB Programme
organizers: Hans Westerhoff and Pernette Verschure

With: Pernette Verschure (SILS, UvA, Coordinator and PI EU H2020 EpiPredict), Antoine van Kampen (UvA/AMC, PI EpiPredict), Alexey Kolodkin (Luxembourg), Frank Bruggeman (VU), Hans Westerhoff (VU/UvA, University of Manchester, PI EpiPredict).

Day 1 (Tuesday 2 February 2016): Introduction to dynamic modelling

Morning:

- 11.30-11.50 Registration and *coffee*
- 11.50-12.00 Welcome (Pernette Verschure)
- 12.00-12.15 Logistics (Hans Westerhoff)
- 12.15-12.45 Systems medicine: what's new (lecture Hans)
- 13.00-14.00 *Lunch*



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Afternoon:

- 14.00-14.30 Translating thoughts to models (lecture: Hans)
- 14.30-15.00 Making simple models with Copasi: signalling, metabolism (computer practical)
- 15.00-15.15 *Coffee break*
- 15.00-16.45 Making simple models with Copasi continued: signalling, metabolism (computer practical)
- 16.45-17.15 Run-through of the session and drawing conclusions (discussion)
- 17.15-18.00 Stochastic gene expression and chromatin (lecture Frank Bruggeman)
- 18.00-19.00 *Dinner (pizza with drinks)*

Evening:

- 19.00-19.45 After-dinner lecture: Network models in cancer: Lodewyk Wessels
- 20.00-22.00 What needs to be modelled in EpiPredict? Take one: Poster viewing and discussions (each EpiPredict fellow presents where her/his topic should be modelled) [Each Fellow has a simple poster/exhibit with just a diagram of what her/his project is about, a portable computer with additional material, and a white board for ideas; fellows will be visited by modellers who will discuss modelling options]. Ideas should be retained for further discussion.

Modellers: Pernette Verschure, Matteo Barberis, Frank Bruggeman, Antoine van Kampen, Alexey Kolodkin, Perry Moerland, Thierry Mondeel, Hans Westerhoff [each modeller will spend 10 minutes at each poster].

Day 2 (Wednesday 3 February 2016): Getting your hands wet

Morning:

- 09.00-9.30 What remains to be discovered, through EpiPredict (lecture Pernette Verschure)
- 09.30-10.30 Making simple models with Copasi: epigenetics (computer practical with Stefania Astrologo)
- 10.30-10.45 *Coffee break*
- 10.45-12.45 Modifying and making models through Copasi: Nuclear Hormone receptor networks and Parkinson's disease (computer practical with Alexey Kolodkin)



12.45-13.00 Run-through of the session and drawing conclusions (discussion)

13.00 -14.00 *Lunch*

Afternoon:

14.00-14.30 The EpiPredict models; take two (discussion in three parallel sessions, each with 3 Fellows on what should be modelled in each case: three models per group)

14.30-15.00 Plenary reporting of modelling plans; feedback from all others (on the biology of the models)

15.00-15.15 *Coffee break*

15.15-17.15 Making initial versions of the models: Assistance for each group of 3 fellows (and 3 models) by a modelling expert; plus a universal expert travelling between groups.

17.15-18.00 Run-through the sessions and drawing conclusions (plenary discussion)

18.00-22.00 Dinner and viewing Amsterdam

Day 3 (Thursday 4 February 2016): First results

Morning:

9.00-10.00 Modelling around the genome: from histones to bi-stability (lecture)

10.00-10.30 Continued modelling, Perfecting the models; preparing figures and ppt slides for presentations (one by each Fellow on her/his model) (computer practical)

10.30 *Coffee break*

12.30-13.00 Practicing the presentations within the groups

13.00-14.00 *Lunch*

Afternoon:

14.00-17.00 The EpiPredict models: presentations of the initial results with a concrete plan for follow up including validation experiments and an action plan for the collaborating modellers: for each model a 10 minutes presentation and 5 minutes discussion, then 15 minutes break after each third presentations (=9 sessions in 3 hours, 2 parallel sessions)

17.00 *Drinks and Certificates*

