

Here you find your group, who suggested the paper = go the course page and download the pdf (under suggested papers and the instructors name). Instructions, Schedule for presentations.

Instructions:

- Each group has approximately 30 minutes. Present (approx 20 min) the paper(s) in a critical manner and lead the following discussion.
- In addition to the papers you present we expect you to have read the other papers to such an extent that you can ask/answer questions about the paper.
- Practical instructions. Bring an USB with your presentation. Jesper T will bring his laptop.

SCHEDULE:

| | |
|----------------|-----------------|
| 10.10 – 10.40 | <i>Group 13</i> |
| 10.40 – 11.10 | <i>Group 4</i> |
| 11.10 - 11.20 | BREAK |
| 11.20 – 11.50 | <i>Group 12</i> |
| 11. 50 – 12.20 | <i>Group 8</i> |
| 12.20 – 13.30 | LUNCH |
| 13. 30 – 14.00 | <i>Group 1</i> |
| 14. 00 – 14.30 | <i>Group 2</i> |
| 14. 30 – 15.00 | BREAK |
| 15. 00 – 15.30 | <i>Group 3</i> |
| 15. 30 – 16.00 | <i>Group 6</i> |
| 16. 00 – 16.30 | <i>Group 5</i> |
| 16. 30 – 16.40 | BREAK |
| 16. 40 – 17.10 | <i>Group 9</i> |
| 17. 10 – 17.40 | <i>Group 11</i> |
| 17. 40 – 18.10 | <i>Group 10</i> |

GROUP 1 – Bayesian Networks – module networks – theory [Jose paper]

Presentation & Discussion – *Alexander & Sara*

Learning Module Networks. with Eran Segal, Aviv Regev, Daphne Koller, and Nir Friedman. Journal of Machine Learning , 6:557-588, April 2005

GROUP 2 – Bayesian Networks – module networks – application [Jose paper]

Presentation & Discussion – *Jenny F & Ola S*

Module networks: identifying regulatory modules and their condition specific regulators from gene expression data with Eran Segal, Micha Shapira, Aviv Regev, David Botstein, Daphne Koller, and Nir Friedman. *Nature Genetics* 34:166-176, June 2003.

From signature to models: understanding cancer using microarrays, . Segal, N. Friedman, N. Kaminski, A. Regev, and D. Koller *Nature Genetics*, 2005 June, 37(6 Suppl): S38-45

GROUP 3 – Bayesian Networks – Friedman & application [Jose paper]
Presentation & Discussion – Roland & Joel

Using Bayesian Networks to Analyze Expression Data Nir Friedman, Michal Linial, Iftach Nachman, Dana Pe'er *Journal of Computational Biology*. Aug 2000, Vol. 7, No. 3-4: 601-62

Derivation of Causal Protein Signaling Networks from Multiparameter Single-cell Data. with Karen Sachs, Omar Perez, Doug Lauffenburger, and Garry Nolan. *Science* , 308:523-529, April 2005

GROUP 4 – Simulators – practice [Henning]
Presentation & Discussion – Erik Järnmark & Erik Gustafsson

Graphical modeling:

CellDesigner <http://celldesigner.org/>
Virtual Cell <http://www.vcell.org/login/login.html>

Mathematical modeling and analysis:

Copasi <http://www.copasi.org>
SBtoolbox <http://www.sbtoolbox.org>

Instead of reading software related research papers students could have a look at the 4 different tools and try to build a simple model and run some simulations. Its harder than it sounds/reads

GROUP 5– Reverse engineering networks – collecting edges [Jesper T paper]
Presentation & Discussion – Jonas Carlsson & Anders Bresell

Genomic analysis of regulatory network dynamics reveals large topological changes Formation During the Yeast Cell Cycle Luscombe et al *Nature* 2004

Dynamic Complex Formation During the Yeast Cell Cycle Ulrik de Lichtenberg,^{1*} Lars Juhl Jensen,^{2*} Søren Brunak,¹ Peer Bork Science 2005

GROUP 6 – Reverse engineering networks – inference of edges – Human Bcells

[Jesper T paper]

Presentation & Discussion – *Hossain Nawaz & Liqun He*

Reverse engineering of regulatory networks in human B cells . Basso et al, Nature Genetics april 2005.

GROUP 7 – Reverse engineering networks – ODE [Michael H paper]

Presentation & Discussion – *Jens N*

LFA Wessels, EP van Someren, MJT Reinders, A comparison of genetic network models, PSB 6: 501-519, 2001

M Gustafsson, M Hörnquist and A Lombardi, Constructing and Analyzing a Large-Scale Gene-to-Gene Regulatory Network, IEEE/TCBB vol 2, no 3, 254-261, 2005

D di Bernardo, et al., Chemogenomic profiling on a genome-wide scale using reverse engineered gene networks, Nature Biotech vol 3, no 3, 377-383, 2005

GROUP 8 – Intracellular noise [Olaf paper]

Presentation & Discussion – *Jacob K & Erland L*

Control, exploitation and tolerance of intracellular noise, Christopher V. Rao*, Denise M. Wolf† & Adam P. Arkin Nature November 2002

GROUP 9 – Celcycle dynamics [Jesper T paper]

Presentation & Discussion – *Sunny & Peter S*

Network dynamics dynamics and cell physiology, Nature Reviews Molecular Cell Biology 2, 908-916, 2001. John J. Tyson, Kathy Chen & Bela Novak

Sniffers, buzzers, toggles and blinkers: dynamics of regulatory and signaling pathways in the cell. Curr Opin Cell Biol. 2003 Apr;15(2):221-31. Review. **Tyson JJ, Chen KC, Novak B.**

GROUP 10 – cellular rhythms [Jesper T paper]
Presentation & Discussion – *Lixiao*

A. Goldbeter: **Computational approaches to cellular rhythms**. Nature Volume 420
November 2002, 238-245

GROUP 11 – circadian rhythms [Jesper T paper]
Presentation & Discussion – *Camilla T*

System-level identification of transcriptional circuits underlying mammalian circadian clocks. Nat Genet. 2005 Feb;37(2):187-92. Epub 2005 Jan 23

Ueda HR, Hayashi S, Chen W, Sano M, Machida M, Shigeyoshi Y, Iino M, Hashimoto S.

Sato TK, Yamada RG, Ukai H, Baggs JE, Miraglia LJ, Kobayashi TJ, Welsh DK, Kay SA, Ueda HR, Hogenesch JB. Feedback repression is required for mammalian circadian clock function. Nat Genet. 2006 Mar;38(3):312-9. Epub 2006 Feb 12.

GROUP 12 – kidney systems biology [Karl T paper]
Presentation & Discussion – *Josefin & Torbjörn*

Mechanisms of Disease Hereditary Proteinuria Syndromes and Mechanisms of Proteinuria Karl Tryggvason, M.D., Ph.D., Jaakko Patrakka, M.D., Ph.D., and Jorma Wartiovaara, M.D., Ph.D. New England Journal of Medicine 2006

GROUP 13 – Uri Alon dynamics of networks [Jesper T paper]
Presentation & Discussion – *Olivia & Jesper L*

Alon Zaslaver, Avi E Mayo, Revital Rosenberg, Pnina Bashkin, Hila Sberro, Miri Tsalyuk, Michael G Surette & Uri Alon, *Just-in-time transcription program in metabolic pathways* Nature Genetics 36, 486 - 491 (2004).

Shiraz Kalir and Uri Alon, *Using a Quantitative Blueprint to Reprogram the Dynamics of the Flagella Gene Network* Cell, 117:713–720, (2004).