

**CMPT 884
Martin Ester
Spring 2018**

Literature List

This is a list of suggested research topics and corresponding papers for the student presentations and course projects. Note that our own publications on this list will be presented by me to introduce the research topics and should not be chosen for student presentations.

You are welcome to propose other papers from these topics or suggest other research topics of machine learning for the life sciences. If so, please discuss your topics / papers with me.

1) Patient stratification

- [Sahand Khakabimamaghani](#), Martin Ester:

Bayesian Biclustering for Patient Stratification. [PSB 2016](#): 345-356

- Zhengxing Huang, Wei Dong, Huilong Duan

A probabilistic topic model for clinical risk stratification from electronic health records, [J Biomed Inform.](#) 2015 Dec;58:28-36

- Huang Z., Dong W., Duan H.:

MICRORNA-AUGMENTED PATHWAYS (mirAP) AND THEIR APPLICATIONS TO PATHWAY ANALYSIS AND DISEASE SUBTYPING, [PSB 2016](#); 22: 390–401.

- [Ross JC](#), [Castaldi PJ](#), [Cho MH](#), [Chen J](#), [Chang Y](#), [Dy JG](#), [Silverman EK](#), [Washko GR](#), [Jose Estepar RS](#):

A Bayesian Nonparametric Model for Disease Subtyping: Application to Emphysema Phenotypes, [IEEE Trans Med Imaging.](#) 2017 Jan;36(1):343-354.

- Ashar Ahmad and Holger Froelich,

Towards clinically more relevant dissection of patient heterogeneity via survival-based Bayesian clustering, [Bioinformatics](#), 33(22), 2017, 3558–3566

- Vibhu Agarwal, Nigam H. Shah:

LEARNING ATTRIBUTES OF DISEASE PROGRESSION FROM TRAJECTORIES OF SPARSE LAB VALUES, [PSB 2017](#)

- Arda Durmaz, Tim A.D. Henderson, Douglas Brubaker, Gurkan Bebek:

FREQUENT SUBGRAPH MINING OF PERSONALIZED SIGNALING PATHWAY NETWORKS GROUPS PATIENTS WITH FREQUENTLY DYSREGULATED DISEASE PATHWAYS AND PREDICTS PROGNOSIS, [PSB 2017](#)

2) Discovery of disease markers

- Phuong Dai, Kendric Wang, Colin Collins, Martin Ester, Anna Lapuk, Süleyman Cenk Sahinalp:

Optimally discriminative subnetwork markers predict response to chemotherapy, Bioinformatics [ISMB/ECCB] 27(13): 205-213

- JIE TAN, MATTHEW UNG, CHAO CHENG, and CASEY S GREENE:
UNSUPERVISED FEATURE CONSTRUCTION AND KNOWLEDGE EXTRACTION FROM GENOME-WIDE ASSAYS OF BREAST CANCER WITH DENOISING AUTOENCODERS, PSB 2015

- Padideh Danaee, Reza Ghaeini, David Hendrix:
A DEEP LEARNING APPROACH FOR CANCER DETECTION AND RELEVANT GENE IDENTIFICATION, PSB 2016

- Madeleine Scott, Francesco Vallania, and Purvesh Khatri:
META-ANALYSIS OF CONTINUOUS PHENOTYPES IDENTIFIES A GENE SIGNATURE THAT CORRELATES WITH COPD DISEASE STATUS, PSB 2017

3) Discovery of driver / causal genes

- Pei Fen Kuan, Junyan Song, Shuyao He:
methyIDMV: SIMULTANEOUS DETECTION OF DIFFERENTIAL DNA METHYLATION AND VARIABILITY WITH CONFOUNDER ADJUSTMENT, PSB 2017

- A. SCHULTZ1 , S. MEHTA1 , C.W. HU1 , F.W. HOFF2 , T.M. HORTON3 , S.M. KORNBLAU2 and A.A. QUTUB:
IDENTIFYING CANCER SPECIFIC METABOLIC SIGNATURES USING CONSTRAINT-BASED MODELS, PSB 2017

- Meng Ma, Changchang Wang, Benjamin Glicksberg, Eric Schadt, Shuyu D. Li, Rong Chen:
IDENTIFY CANCER DRIVER GENES THROUGH SHARED MENDELIAN DISEASE PATHOGENIC VARIANTS AND CANCER SOMATIC MUTATIONS, PSB 2017

- Yue Wu, Farhad Hormozdiari, Jong Wha J Joo and Eleazar Eskin:
Improving imputation accuracy by inferring causal variants in genetic studies, RECOMB 2017

- Borislav Hristov and Mona Singh.
Network-based coverage of mutational profiles reveals cancer genes, RECOMB 2017

4) Drug-target interaction prediction

- Tong He, Marten Heidemeyer, Fuqiang Ban, Artem Cherkasov, Martin Ester:
SimBoost: a read-across approach for predicting drug-target binding affinities using gradient boosting machines. *J. Cheminformatics* 9(1): 24:1-24:14 (2017)
- Bharath Ramsundar, Steven Kearnes, Patrick Riley, Dale Webster, David Konerding, Vijay Pande:
Massively Multitask Networks for Drug Discovery, arXiv 2015
- Ming Wen, Zhimin Zhang, Shaoyu Niu, Haozhi Sha, Ruihan Yang, Yonghuan Yun, and Hongmei Lu:
Deep-Learning-Based Drug-Target Interaction Prediction, *Journal of Proteome Research*
- David Duvenaud, Dougal Maclaurin, Jorge Aguilera-Iparraguirre, Rafael Gómez-Bombarelli, Timothy Hirzel, Al'an Aspuru-Guzik, Ryan P. Adams:
Convolutional Networks on Graphs for Learning Molecular Fingerprints, NIPS 2015
- Han Altae-Tran, Bharath Ramsundar, Aneesh S. Pappu, and Vijay Pande:
Low Data Drug Discovery with One-Shot Learning, *ACS Central Science*, 2017, 3 (4), pp 283–293
- Joseph Gomes Bharath Ramsundar, Evan N. Feinberg, and Vijay S. Pande:
Atomic Convolutional Networks for Predicting Protein-Ligand Binding Affinity, arXiv 2017