

FREIE UNIVERSITÄT BERLIN Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

DISPUTATION

Mittwoch, 20. Juli 2016, 09.00 Uhr

Ort: Raum 1.1.16, Arnimallee 14, 14195 Berlin

Disputation über die Doktorarbeit von

Frau Na Zhu

Thema der Dissertation:

Strategies to prioritize potentially disease causing mutations in Mendelian disorders

Thema der Disputation:

Detection and interpretation of de novo mutations in human genomes

Die Arbeit wurde unter der Betreuung von **Prof. Dr. M. Vingron** durchgeführt.

Abstract: De novo mutations represent the most extreme form of rare genetic variation. Comparing to inherited variants, a higher fraction of de novo mutations is deleterious, as selection pressure just started to act upon them. This makes these mutations prime candidates for the genetic cause of disorders that occur sporadically. In this talk, I will present a pipeline for detecting de novo mutations in whole genome trios, that was used in Wong et al. [1] for studying age dependencies in mutation rates. On the one hand, the distribution of de novo mutations over the genome is useful to identify genes that are depleted for such mutations in healthy controls and to indicate intolerance to loss of heterogeneity. On the other hand, the excess of de novo mutations in disease groups can point out to disease-associated genes. Therefore, I will also present a statistical framework for the analysis of de novo mutations excess as described by Samocha et al. [2].

[1] Wong, Wendy S. W.; Solomon, Benjamin D.; Bodian, Dale L.; Kothiyal, Prachi; Eley, Greg; Huddleston, Kathi C. et al. (2016): New observations on maternal age effect on germline de novo mutations. In Nature Communications 7, p. 10486. DOI: 10.1038/ncomms10486.

[2] Samocha, Kaitlin E.; Robinson, Elise B.; Sanders, Stephan J.; Stevens, Christine; Sabo, Aniko; McGrath, Lauren M. et al. (2014): A framework for the interpretation of de novo mutation in human disease. In Nature genetics 46 (9), pp. 944–950. DOI: 10.1038/ng.3050.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. M. Vingron