

# LECTURE

## Dr Rafał Gutaker

Center for Genomics and System Biology,  
New York University

will deliver a lecture titled:

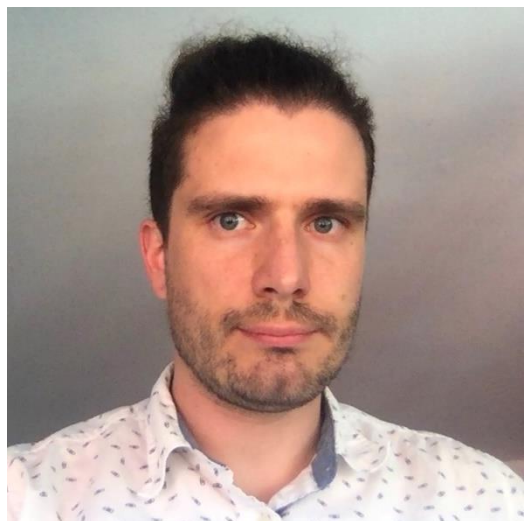
### *New generation sequencing and ancient DNA in the service of plant evolutionary genomics*

DATE: Thursday, 1 August 2019 | 11.00

VENUE: CNBCh UW, seminar room 0.109

#### ABSTRACT:

The advances in sequencing technologies and improved methods for retrieval of ancient DNA made it possible to sequence whole genomes of long-dead organisms. While the most impressive discoveries thus far were made for humans, there are growing possibilities and growing demand to analyze historical and ancient genomes of plants. All the methods applied to human aDNA can be used directly, or with small modifications, to analyze plant aDNA. Highlighted by work on potato, maize and rice that I have lead, I would like to exemplify how whole genome data of historical and ancient specimens helped in understanding the processes of crop dispersal and adaptation. Historical genomics allowed tracing the complex origin and adaptation history of European potato. Our study helped us gain a deeper understanding of the potato introduction to Europe, where it adapted to very different environment compared to the place of its origin, South America. Moving back in time, our investigation of maize ancient genomes allowed us to reconstruct its North American dispersal in the context of shift from tropical to temperate climate. Finally, our reconstruction of rice dispersal based on the contemporary diversity of genomes revealed strong association with paleoenvironmental and archaeological transitions in Asia. The lack of aDNA data for rice present a major hurdle in our understanding of the key aspects of rice evolution.



#### Activity at Home University:

I am a Postdoctoral Associate at the Center for Genomics and Systems Biology, New York University. I lead research projects on comparative genomics of crop plants and method development for plant ancient DNA.

#### Research field:

Ancient DNA revolutionized the field of evolutionary biology for humans and ignited that revolution for other model and non-model organism. Plant ancient DNA can help us better understand the origins of crops, their dispersal and evolution in different environmental conditions. This is very important because our food security relies heavily on the diversity of our crops and their ability to evolve in response to changing climate.

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