若手研究者インターナショナル・トレーニング・プログラム(ITP)
バイオインフォマティクスとシステムズバイオロジーの国際連携教育研究プログラム
ワークショップ参加レポート

Name: Takeyuki Tamura

Title: Computing Impact Degrees for Multiple Reactions in Metabolic Networks with Cycles

Workshop report：

I had an opportunity for giving an talk on the above title. The impact degree is a measure of the robustness of a metabolic network against deletion of single or multiple reaction(s). Although such a measure is useful for mining important enzymes/genes, it was defined only for networks without cycles. In this work, we extend the impact degree for metabolic networks containing cycles especially in order to predict essential genes and synthetic lethal pairs in silico. As an result of the preliminary experiment, we showed 12 of top 14 genes associated with high impact degree are included in the list of essential genes. One of our important future works is to show that our prediction method can also predict synthetic lethal pairs with high accuracy.

After my talk, there were also some indications which should be taken into account in future. One is to compare our method with SCOPE based method. The other is to investigate the accuracy of a simple method such as choosing nodes with high degree.

As a whole, the content of the workshop was very interesting. One new thing I was trying in the workshop was to become “facebook friends” with participants from Boston and Berlin. Because I am not very good at memorize faces and names of first-meet people, I thought Facebook is an useful tool for me. But the result was not very good maybe because I am not yet very used to Facebook and I should have talked to more people from Boston and Berlin. But I hope Facebook will be a powerful tool for me in future.

I also attended the summer school held after the workshop. It was a good opportunity for re-learning Differential equations and Hidden Markov Model.

Since the sundown of Berlin in July is around 10PM, we had a plenty of time for sightseeing after the workshop and the summer school. I visited remains of Berlin wall, the famous ex-check point, Pergamon museum, the Brandenburg Gate etc. The attached photo was taken around 10PM, but the sky is not completely dark.