SIAM Student Chapter
Seminar

Quantitative genetics of muscle mass loss - sarcopenia, the new epidemic in developed countries - there is no solution without mathematics

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Abstract: Lean body mass (LBM) is one of the three major components of body composition, which includes also body fat (FBM) and bone mass (BBM). As the other two components it is highly important for normal physiology and metabolism, and deviations from normal values are often associated with various pathological conditions. Of these the major one is probably sarcopenia ? the age related loss of muscle mass. However, while for each of FBM and BBM, many dozens of publications concerning candidate genes, whole genome linkage and association studies were published during the last two decades, there are virtually no publications on LBM in this respect. Huge effort is now invested in creation of a large international consortium which will tackle this problem.

The main aim of this talk will be twofold. One, it will be focused on the results of our genetic epidemiological study of LBM and sarcopenia in a normal human population. We present estimates of the putative genetic factors contribution and results of the whole genome linkage and association analyses. The second aim is to attract the mathematicians? attention to a number of difficult problems in which modern biology became engaged with unprecedented development of biotechnology and bioinformatics. This includes such ?classical? problems, inherited from whole genome linkage studies, as multiple testing adjustments and multiple signal combination, and relatively new problems as e.g. multiple low effect signals and their interactions and several others.

Friday, February 20, 2009, 3:00 pm
Mathematics and Science Center, Room W303

Refreshments will be served before the talk

Mathematics and Computer Science
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