

Georgia Institute of Technology

Schools of Electrical & Computer and Biomedical Engineering

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Letter of Recommendation for Dr. Eliezer Hershkovitz:

I am happy to write this letter in strong support for Dr. Eliezer Hershkovitz to receive a position in your department. Dr. Hershkovitz has been working as a research scientist at Georgia Tech for the past 2.5 years with Dr. Loren Williams and me on a project involving RNA conformation. Hershkovitz came up with some nice ideas in this regard which I will describe below.

First of all, Dr. Hershkovitz is a very versatile researcher. He has been trained as a physicist at the Weizmann Institute of Science where he did a first-class thesis on the Fokker-Planck equation. He is also an expert on problems in chemical physics to which he can add his strong mathematical background in order to give rigorous treatment to a number of key issues. It was his physical intuition and rigor that led us to begin to work on the RNA conformation project.

Specifically Hershkovitz has developed fast, automated and generally-applicable pattern recognition methods for:

- (i) locating known canonical conformations (motifs);
- (ii) discovering novel canonical conformations; and
- (iii) discovering statistical rules governing canonical conformations.

The long term goal of Hershkovitz is to develop generally applicable approaches for characterizing inter- and intra-molecular interactions of RNA with water molecules, ions, small molecules, proteins, other RNA molecules, etc. He would like to combine the results of conformational pattern recognition approaches, with analysis of molecular interactions.

Dr. Hershkovitz has already developed methods for facile pattern recognition, as well as for simplified and abbreviated representations of complex three dimensional structures. This allows him to map continuous conformational information into discrete bins, which allows him in turn to assign local conformation states to ASCII characters. Thus the conformation and sequence of a large RNA can be described by a text string. Hershkovitz is now testing various hypotheses regarding the distillation of information to essentials while maintaining accuracy in describing, analyzing and representing conformation and interaction. He has also applied vector quantization methods to RNA, and from this deduced some new motifs. He was the first to apply this method to all seven torsion angles together (vectorially) instead of singly.

One can only be very impressed by the encyclopedic knowledge that Dr. Hershkovitz has amassed about RNA in the two years that he has been working on the project. He is extremely thorough, and will not publish until he is absolutely certain about every detail.

In summary, Dr. Hershkovitz is a very good researcher with a strong background in physics, mathematics, and biochemistry which he has used to study some key issues in computational biology and bioinformatics. I think he will make a strong addition to your research efforts, and so

I certainly recommend that he receive a position in your department. Please feel free to contact me if you should need any more information about this matter.

Sincerely yours,

Allen Tannenbaum
Julian Hightower Professor