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Statistical Physics Approaches to RNA Editing¹

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The central dogma of molecular Biology states that DNA is transcribed base by base into RNA which is in turn translated into proteins. However, some organisms edit their RNA before translation by inserting, deleting, or substituting individual or short stretches of bases. In many instances the mechanisms by which an organism recognizes the positions at which to edit or by which it performs the actual editing are unknown. One model system that stands out by its very high rate of on average one out of 25 bases being edited are the *Myxomycetes*, a class of slime molds. In this talk we will show how the computational methods and concepts from statistical Physics can be used to analyze DNA and protein sequence data to predict editing sites in these slime molds and to guide experiments that identified previously unknown types of editing as well as the complete set of editing events in the slime mold *Physarum polycephalum*.

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