

Dr. Scott Stevens
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11:30 a.m.
101 Biochemistry

Mechanism, assembly and composition of the pre-mRNA processing machinery

Research in the Stevens Laboratory

Ribonucleoproteins (RNPs) function in many cellular processes and the malfunction of some of these RNPs cause serious human disease. To better understand how disease states can be corrected, our laboratory studies the ways in which RNA and protein assemble into large RNP complexes, how those complexes function, how they are rearranged in the course of their action and how they get put back together again. Using yeast genetics, biochemistry, cryo-electron microscopy and X-ray crystallography, we seek to understand the details of the structure and function of the yeast spliceosome and other RNPs. We are also experimenting in the mammalian system by designing human cells and mice to allow us to study the complex splicing reaction in these model systems as well. These tools we have developed for the metazoan systems have allowed us to study the pre-mRNA processing machinery inside live cells. We have uncovered over 50 new protein factors associated with the pre-mRNA processing machinery and will be using this new information to better understand how the spliceosome works.

References

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