# David Staněk

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LABORATORY OF

# RNA BIOLOGY

**pre-mRNA splicing, spliceosome, epigenetics, nuclear architecture, *retinitis pigmentosa***

**In the picture:**
**1.** Adriana Roithová | **2.** Klára Klimešová | **3.** Davide Basello | **4.** Prasoon Kumar Thakur | **5. David Staněk** | 6. Zuzana Cvačková | **7.** Jasper Manning | **8.** Anna Malinová | **9.** Mina Obuca | **10.** Michaela Krausová | **11.** Jana Machatová-Křížová | **12.** Zuzana Krchňáková | **13.** Andrea Bosáková

Our long-term interest is to determine how cells decode information stored in the genome. We focus on the molecules called mRNAs that serve as messengers between DNA and proteins. Information for protein synthesis in our genome is fragmented and the coding sequences are joined together after transcription of DNA into RNA in a process called RNA splicing. In our laboratory, we analyse how the protein-coding fragments are recognized and joined together. We mainly focus on how the nuclear environment and mainly chromatin influence RNA splicing. In addition, we study the quality control mechanisms that ensure that the splicing machinery is correctly formed on proper RNA. These studies also help us to understand why mutations in proteins that catalyse RNA splicing cause retinitis pigmentosa, a human genetic disease characterized by photoreceptor cell degeneration. As we mostly study all these processes directly in living cells, we widely employ cell culture and various microscopy techniques (e.g., super-resolution fluorescence microscopy, live cell imaging, high-content microscopy, and other).

**Selected recent papers:**

Bieberstein N I, Kozáková E, Huranová M, Thakur P K, Krchňáková Z, Krausová M, Carrillo-Oesterreich F, Staněk D: (2016) TALE-directed local modulation of H3K9 methylation shapes exon recognition. **Sci. Rep. 6**: 29961.

Růžičková Š, Staněk D: (2016) Mutations in spliceosomal proteins and retina degeneration. **RNA Biol.**, Jun 14: 1-9. [Epub ahead of print].

Novotný I, Malinová A, Stejskalová E, Matějů D, Klimešová K, Roithová A, Švéda M, Knejzlík Z, Staněk D: (2015) SART3-dependent accumulation of incomplete spliceosomal snRNPs in Cajal bodies. **Cell Rep. 10**: 429–440.


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