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Two challenges in drug discovery are (1) finding the targets that, when modulated, will treat or cure a disease and (2) finding the therapies that modulate those targets. We are a computational team that takes an integrative approach to target discovery while innovating the new modalities to drug those targets. A new modality of focus is RNA as a target; the exploitation of a weak link in the fate of an RNA for the treatment of a disease. To find the weak link we use statistical and advanced methods to bring together transcriptomics, proteomics, ribosome profiling, eCLIP, and other NGS or proprietary data. In doing so, we learn about which RNA-protein interactions, splicing changes, translation start sites, etc. can be modulated to effect the target. Partnership is key and we collaborate with experts across data science, chemistry, biophysics, genomics, high throughput screening, biology, chemoproteomics, and more.

Selected Publications

TFEB Transcriptional Responses Reveal Negative Feedback by BHLHE40 and BHLHE41
Carey KL, Paulus GLC, Wang L, Balce DR, Luo JW, Bergman P, Ferder IC, Kong L, Renaud N, Singh S, Kost-Alimova M, Nyfeler B, Lassen KG, Virgin HW, Xavier RJ.
Cell Rep. 2020 Nov 10;33(6)

The Genetic Architecture of Carbon Tetrachloride-Induced Liver Fibrosis in Mice
Tuominen I, Fuqua BK, Pan C, Renaud N, Wroblewski K, Civelek M, Clerkin K, Asaryan A, Haroutunian SG, Loureiro J, Borawski J, Roma G, Knehr J, Carbone W, French S, Parks BW, Hui ST, Mehrabian M, Magyar C, Cantor RM, Ukomadu C, Lusis AJ, Beaven SW.
Cell Mol Gastroenterol Hepatol. 2020 Aug 28;11(1):199-220

SMN2 splice modulators enhance U1-pre-mRNA association and rescue SMA mice
Palacino J, Swalley SE, Song C, Cheung AK, Shu L, Zhang X, Van Hoosear M, Shin Y, Chin DN, Keller CG,

Beibel M, Renaud NA, Smith TM, Salcius M, Shi X, Hild M, Servais R, Jain M, Deng L, Bullock C, McLellan M, Schuierer S, Murphy L, Blommers MJ, Blaustein C, Berenshteyn F, Lacoste A, Thomas JR, Roma G, Michaud GA, Tseng BS, Porter JA, Myer VE, Tallarico JA, Hamann LG, Curtis D, Fishman MC, Dietrich WF, Dales NA, Sivasankaran R.
Nat Chem Biol. 2015 Jul;11(7):511-7

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