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Immunotherapy, as exemplified by PD-1 inhibitors, have revolutionized the treatment of specific cancer types, often in combination with chemotherapy or targeted therapies. However, a large fraction of patients fails to respond to these treatments. My laboratory is exploring the cancer cell autonomous resistance mechanisms utilizing a combination of techniques such as genetic screening, scRNAseq, and proteomics to study cancer cells that are refractory to T cell mediated killing. Indeed, understanding the resistance mechanism(s) might help the design of future therapeutic strategies for targeting this cell population to produce deeper and longer lasting patient responses.

We work in close collaboration with Dr. Matt Niederst's lab (Postdoc Co-Mentor) and pharmacology, data sciences, next generation sequencing and translational oncology groups within NIBR as well as external academic collaborators.

Selected Publications

PTEN Loss Mediates Clinical Cross-Resistance to CDK4/6 and PI3Kα Inhibitors in Breast Cancer.
Costa C, Wang Y, Ly A, Hosono Y, Murchie E, Walmsley CS, Huynh T, Healy C, Peterson R, Yanase S, Jakubik CT, Henderson LE, Damon LJ, Timonina D, Sanidas I, Pinto CJ, Mino-Kenudson M, Stone JR, Dyson NJ, Ellisen LW, Bardia A, Ebi H, Benes CH, Engelman JA, Juric D.
Cancer Discov. 2020 Jan;10(1):72-85.

Exploitation of the Apoptosis-Primed State of MYCN-Amplified Neuroblastoma to Develop a Potent and Specific Targeted Therapy Combination.
Ham J*, Costa C*, Sano R, Lochmann TL, Sennott EM, Patel NU, Dastur A, Gomez-Caraballo M, Krytska K,

Hata AN, Floros KV, Hughes MT, Jakubik CT, Heisey DA, Ferrell JT, Bristol ML, March RJ, Yates C, Hicks MA, Nakajima W, Gowda M, Windle BE, Dozmorov MG, Garnett MJ, McDermott U, Harada H, Taylor SM, Morgan IM, Benes CH, Engelman JA, Mossé YP, Faber AC. *Co-first authors
Cancer Cell. 2016 Feb 8;29(2):159-72.

Measurement of PIP3 levels reveals an unexpected role for p110β in early adaptive responses to p110α-specific inhibitors in luminal breast cancer.
Costa C, Ebi H, Martini M, Beausoleil SA, Faber AC, Jakubik CT, Huang A, Wang Y, Nishtala M, Hall B, Rikova K, Zhao J, Hirsch E, Benes CH, Engelman JA.
Cancer Cell. 2015 Jan 12;27(1):97-108.

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