
BTherapeutics

Company overview

- B3 seeks to develop novel nanoparticle (NP)-based therapeutics which bypass the blood brain barrier (BBB)
- Direct delivery into the CNS achieved via intrathecal infusion or convection-enhanced delivery (CED)
- Our approach can be applied to an array of small molecules and nucleic acid-based therapeutics
- Our therapeutic strategies have the potential to treat a wide range of primary CNS tumors and metastases
- World class team of founders with a track record of translating high impact science into the clinic
- *In vivo* proof-of-concept data supports the feasibility and efficacy of NP-encapsulated DNA repair inhibitors
- Foundational IP to be exclusively licensed from Yale and UConn
- Raising Seed round funding to support key *in vivo* studies for candidate nomination and platform expansion

Founding team

Mark Saltzman, PhD
Founding Chair and Professor
Yale School of Biomedical Engineering

Ranjit Bindra, MD, PhD
Harvey and Kate Cushing Professor
Yale School of Medicine

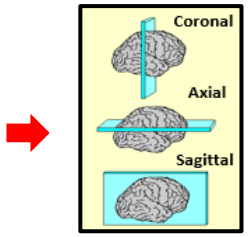
Elias Quijano, MD ('24), PhD
MD/PhD Student,
Gennao Founder

Raman Bahal, PhD
Associate Professor
UConn School of Pharmacy

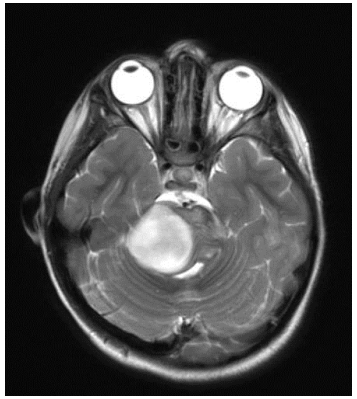
Kevin Rakin
Partner
HighCape Capital

Unmet need: effective therapies for brain tumors

Most adult and pediatric CNS cancers are difficult to treat, and patients rarely survive more than 1-2 years…

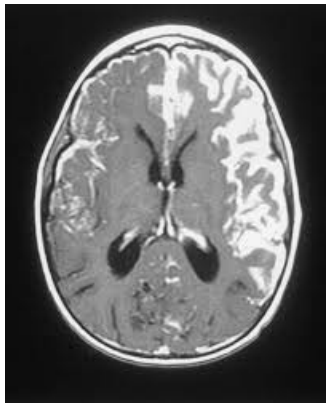


Diffuse Intrinsic Pontine Glioma (DIPG)



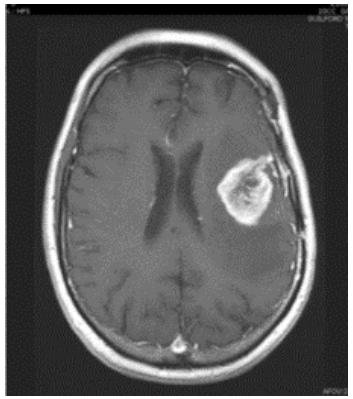
Median Overall Survival: 4-17 months

Recurrent Medulloblastoma and Ependymoma



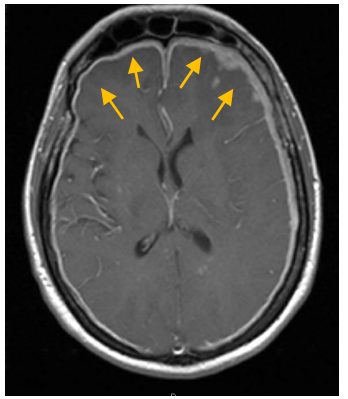
Median Overall Survival: 6 months-2 years

Recurrent Glioblastoma



Median Overall Survival: 6-12 months

Brain and Leptomeningeal Metastases



Median Overall Survival: 3-12 months

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3953419/#SD1
https://dipgregistry.org/physicians/prognosis/
https://www.sciencedirect.com/science/article/pii/S111003621630036X
https://pubmed.ncbi.nlm.nih.gov/12892237/

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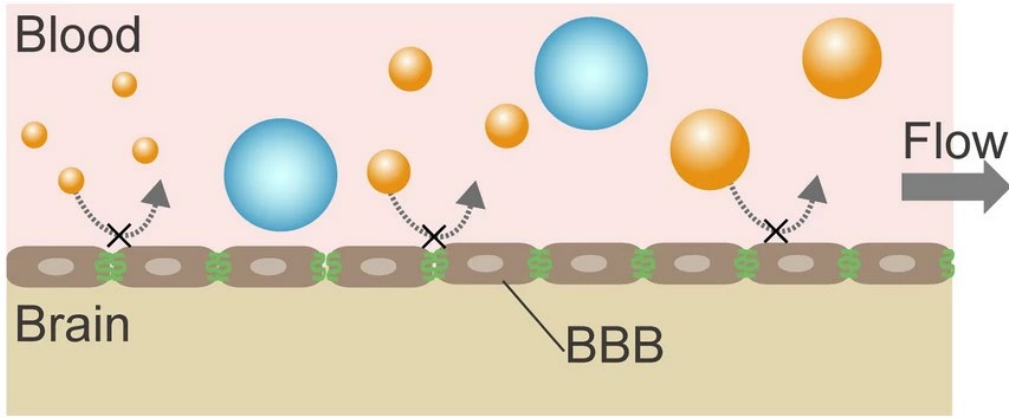
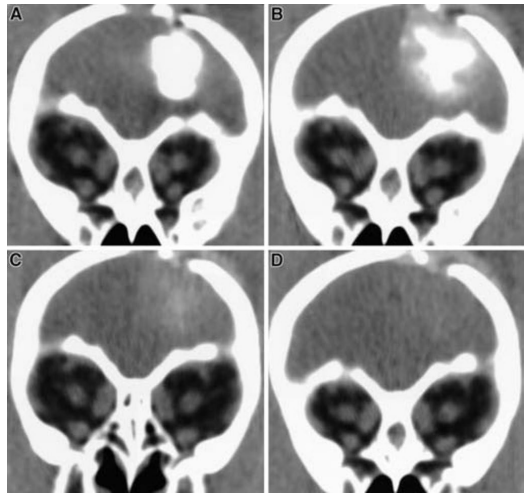
The blood brain barrier (BBB): a key treatment efficacy barrier

1. *The BBB blocks >98% of all small molecules when administered systemically*



2. *Direct drug injection into the CNS is rapidly cleared*

Convection enhanced delivery (CED)

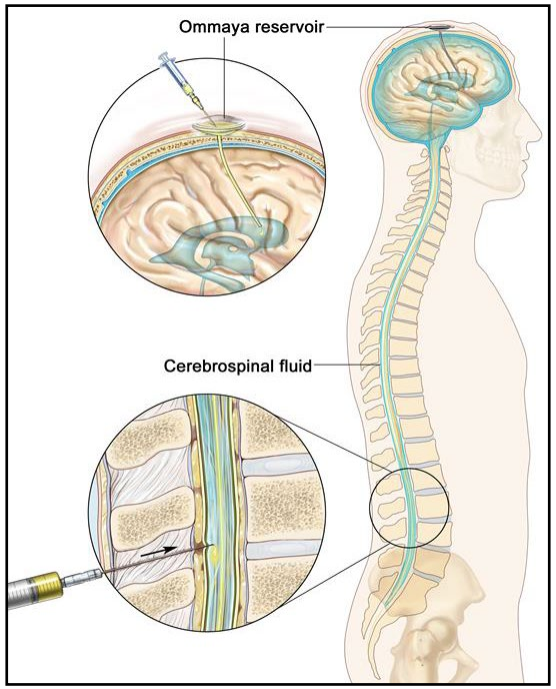


J Neurosurg 102:90–97, 2005

Real-time in vivo imaging of the convective distribution of a low-molecular-weight tracer

David Croteau, M.D., Stuart Walbridge, B.S., Paul F. Morrison, Ph.D., John A. Butman, M.D., Alexander O. Vortmeyer, M.D., Dennis Johnson, B.S., M.B.A., Edward H. Oldfield, M.D., and Russell R. Lonser, M.D.

Intrathecal (IT) administration



Opioid Drug	Half-life in CSF	Duration of action
Morphine	90 min	12-24 hrs
Meperidine	68 min	1-3 hrs
Sufentanil	100 min (after epidural)	1-3 hrs

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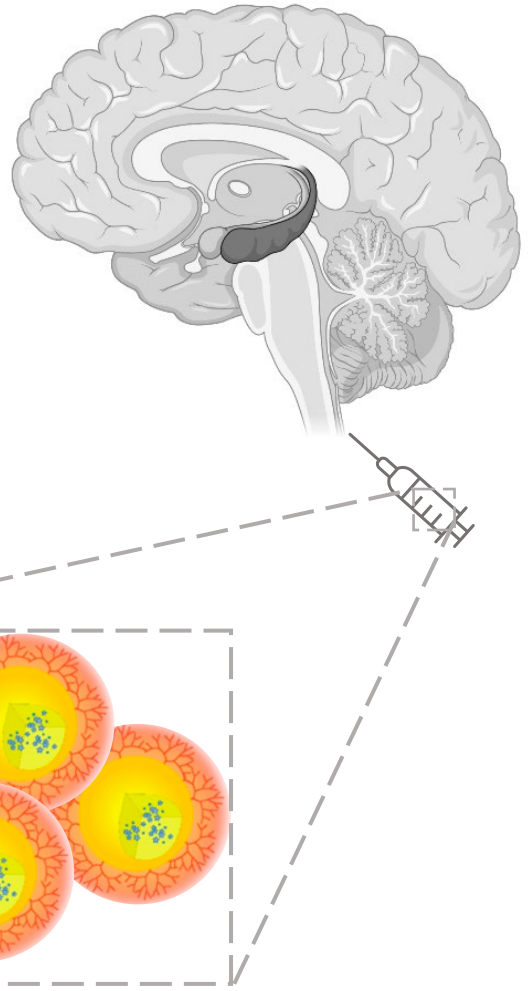
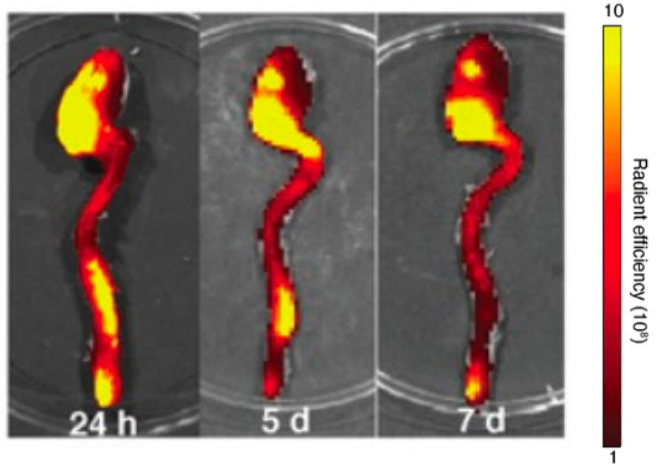
Our novel approach to bypass the blood brain barrier (BBB)

- Sustained release nanoparticles (NPs) for intrathecal (IT) injection into the CNS
- NPs have been optimized to encapsulate small molecules and nucleic acids
- NP distribution throughout the CNS, retention for >3 weeks after a single injection
- Robust *in vivo* efficacy confirmed in a pediatric CNS tumor model
- NPs can be also be administered via convection-enhanced delivery (CED)



B3's nanoparticles distribute throughout the brain and spinal cord following an IT injection



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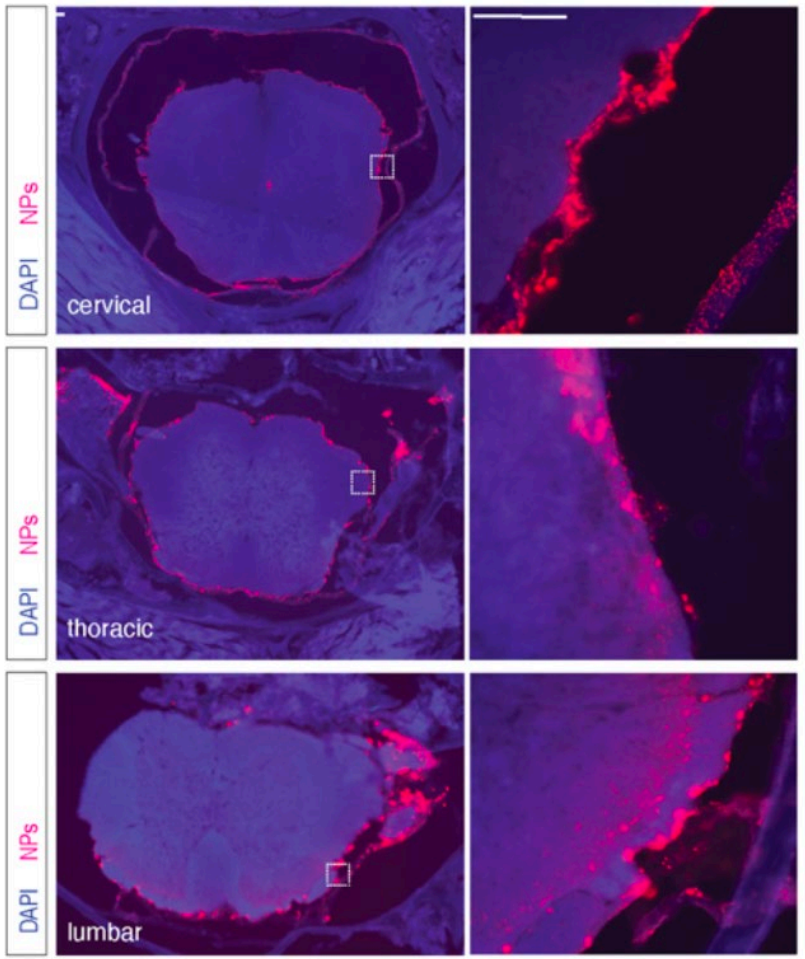
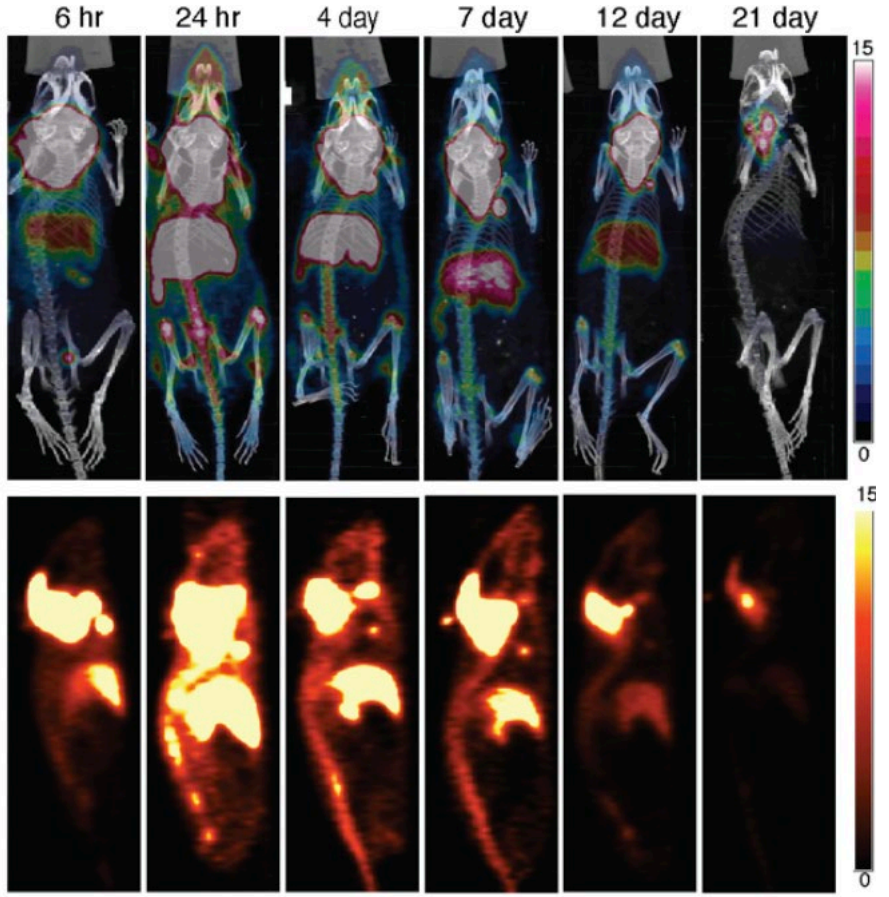
B3's polymeric nanoparticles: enhancing retention and distribution of drugs

1. B3's nanoparticles distribute throughout the brain and spinal cord following a single IT injection



2. Enhanced retention of drugs administered into the CSF, detectable for >3 weeks after a single dose



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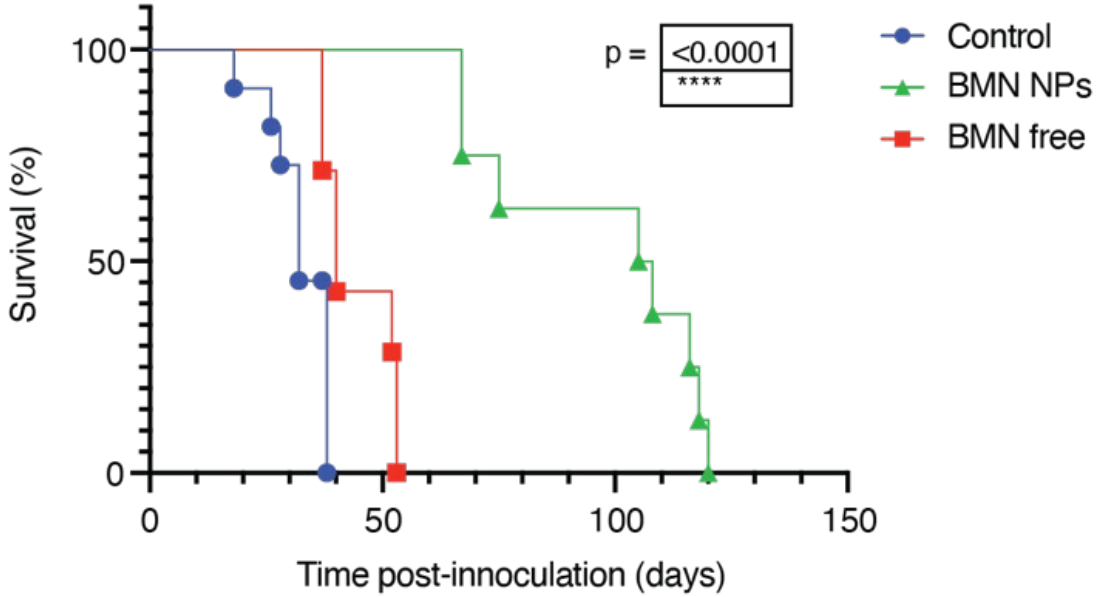
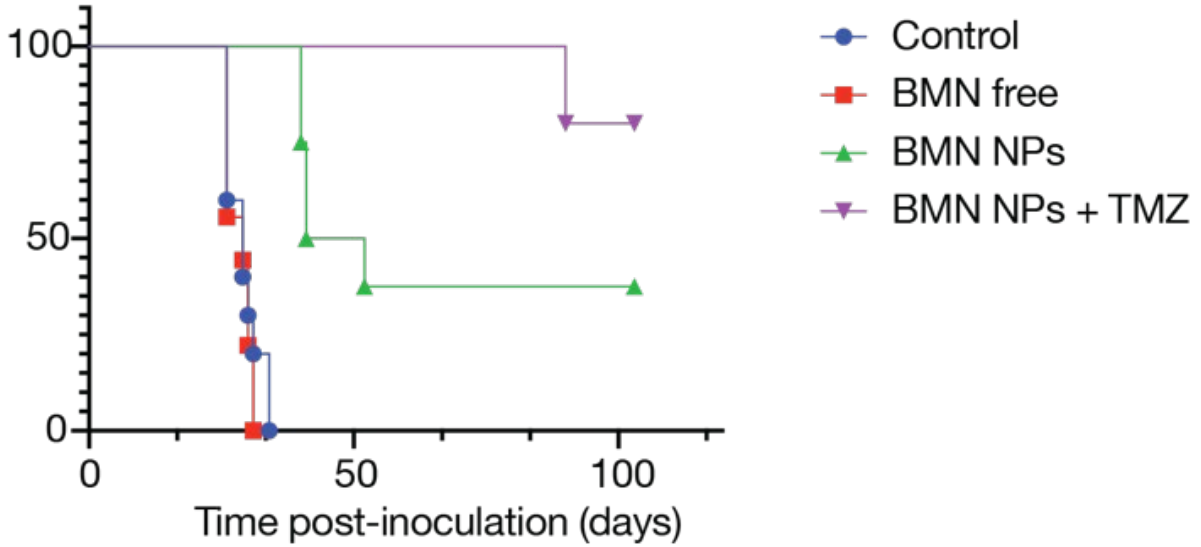
IT administration of B3's nanoparticles significantly enhances anti-tumor efficacy

A single dose of B3 NPs encapsulating a PARP inhibitor (BMN-673) significantly improves survival, as a monotherapy or combined with chemotherapy, in an orthotopic mouse model of medulloblastoma





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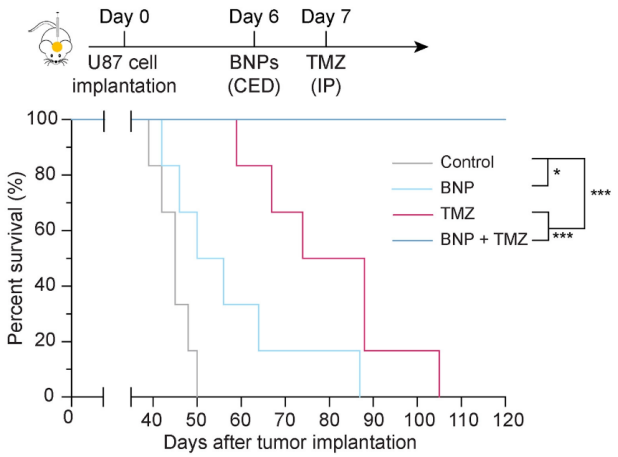
A library of polymeric nanoparticles enables B3 to deliver diverse therapeutic payloads

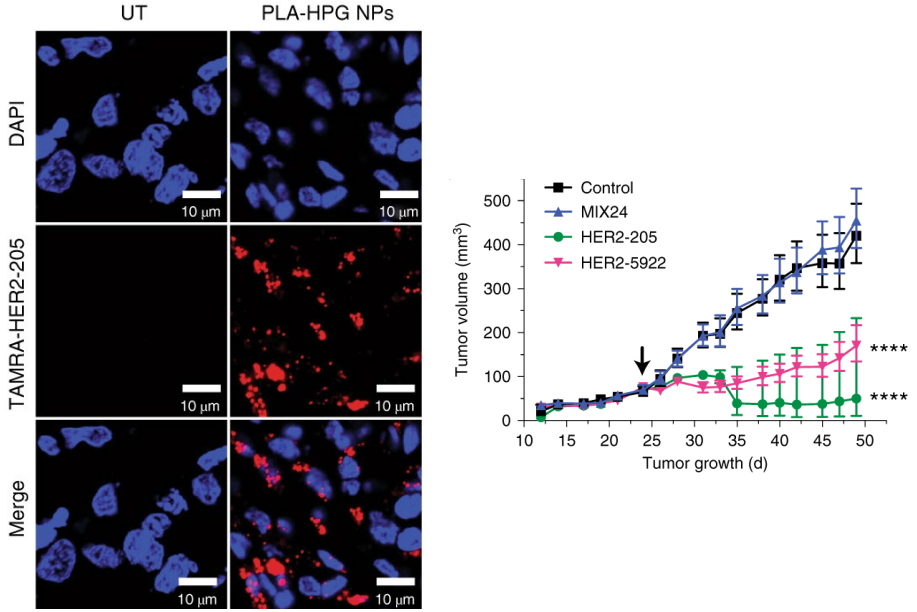
B3's versatile enables us to address multiple CNS disorders in addition to lead oncology indications

Anti-Sense Oligonucleotides



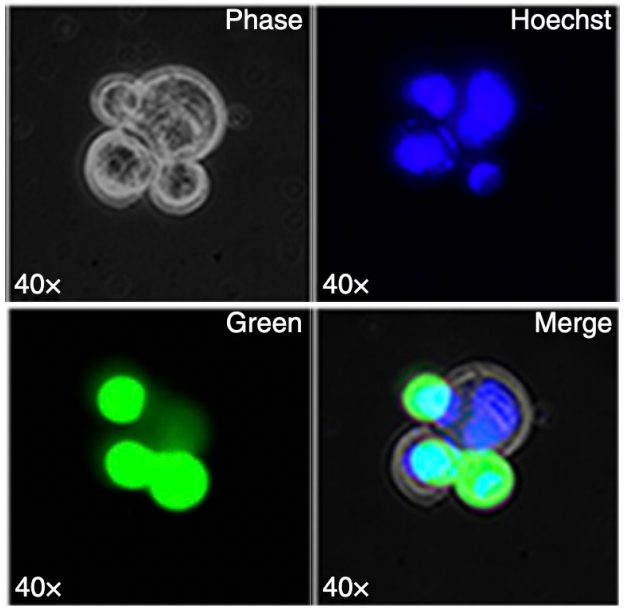
Science Advances, 2023

DNA Oligonucleotides



Nature Biotechnology, 2021

Plasmid DNA



Mol. Can. Ther., 2016

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