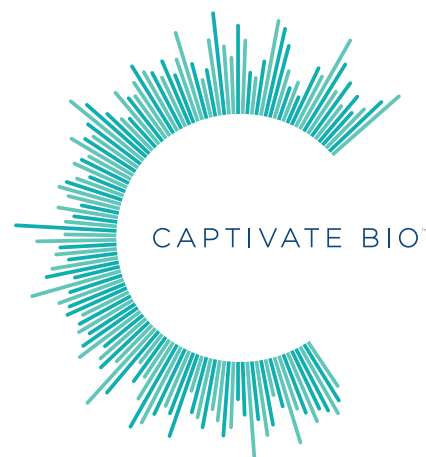


# SMALL MOLECULES

for *stem cell* research



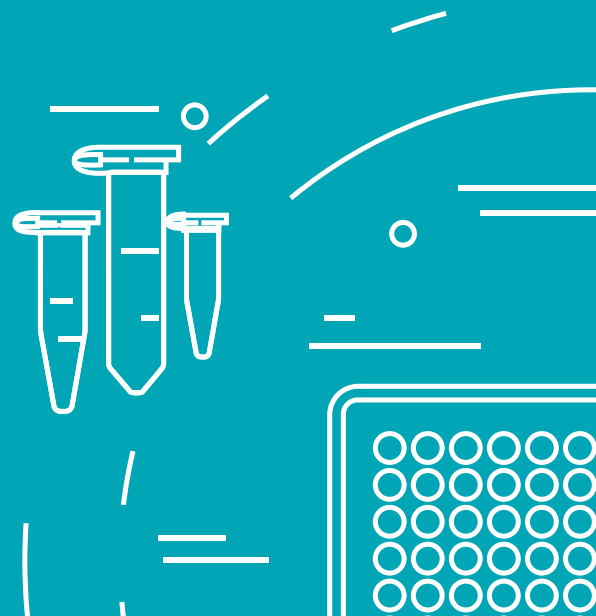


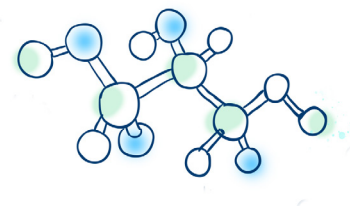
# Your research is our purpose

Captivate Bio specializes in the development and delivery of innovative cell culture tools and reliable US-based media manufacturing services to the research, therapeutic, and healthcare communities at an affordable price to all.

We are obsessively passionate about the possibilities of cellular technologies and in our ability to empower researchers with the scientific tools to create a better world.

Let's create captivating science, **together.**





# Control *stem cell* growth and differentiation with small molecules

Gain ultimate control over your cell cultures with Captivate Bio's portfolio of small molecules for stem cell research. A growing number of small molecules have been identified to maintain the self-renewal potential of stem cells, to induce lineage differentiation, and to facilitate cellular reprogramming across a wide range of applications including 3D modeling as well as cancer, diabetes, neuronal, and cardiovascular research.

While these powerful tools are capable of modulating key pathways and targets within a cell, effects can be easily fine-tuned by varying combinations and concentrations. All Captivate Bio's small molecules are rigorously tested by liquid chromatography and mass spectrometry to guarantee highest purities and chemical structure consistency.



High quality  
guaranteed



Low price and  
fast delivery

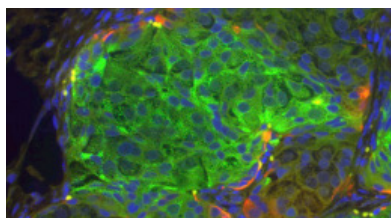


Third-party tested  
and validated



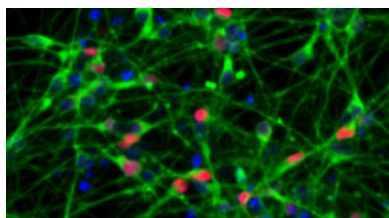
High purity and  
consistent activity

## Application spotlight



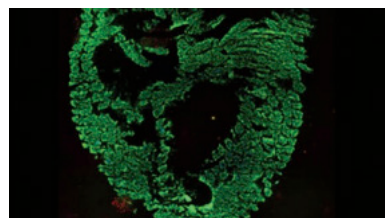
### Diabetes Research

A scalable differentiation protocol to derive functional insulin-producing beta cells from hPSCs published by Pagliuca, et al. (2014) presents a six-stage protocol using a combination of multiple small molecules and growth factors has shown promise in ameliorating hyperglycemia in mice.



### Neural Research

Qi, et al. (2017) describes a protocol in which a cocktail of seven small molecules allow for the creation of cortical neurons capable of producing long-range axonal projections. These cells begin to show mature neural characteristics in just 16 days, and later become fully functional.



### Cardiovascular Research

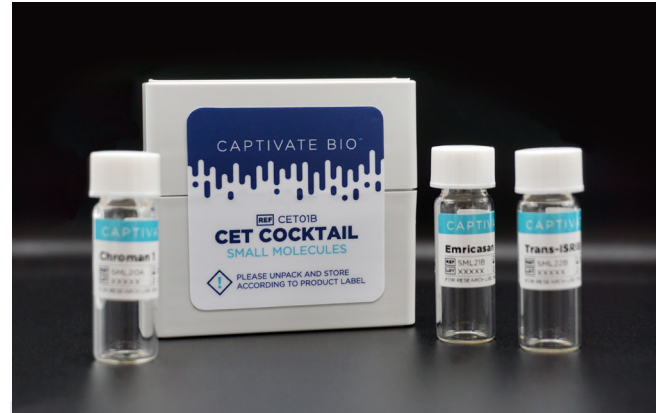
Noor, et al. (2019) utilized hiPSCs differentiation protocols published by Edri, et al. (2018) and Lian, et al. (2012) for the modeling of 3D vascularized and perfusable heart patches to ultimately be applied to personalized cardiac models and drug screening applications.

## Reliable solution for improved stem cell workflows

Supplementation of small molecules in the CET Cocktail has been shown to directly and efficiently enhance pluripotent stem cell survival and promote clonal growth and expansion of genetically stable hPSCs<sup>1</sup>. The published CEPT combination allows for safe, controlled, and efficient strategies for the generation, expansion, differentiation, and banking of stem cell-based therapeutic products. This small molecule cocktail is also key for optimized embryoid body (EB) and organoid formation, as well as superior cryopreservation of pluripotent and differentiated cells by protecting cells from multiple cellular stress mechanisms in a synergistic fashion<sup>1</sup>.

### Advantages of using the CET Cocktail:

- More effective than standard treatments
- Improved survival of dissociated cells in culture
- Higher yield of viable hPSC clones
- Validated to be safe for long-term hPSC culture

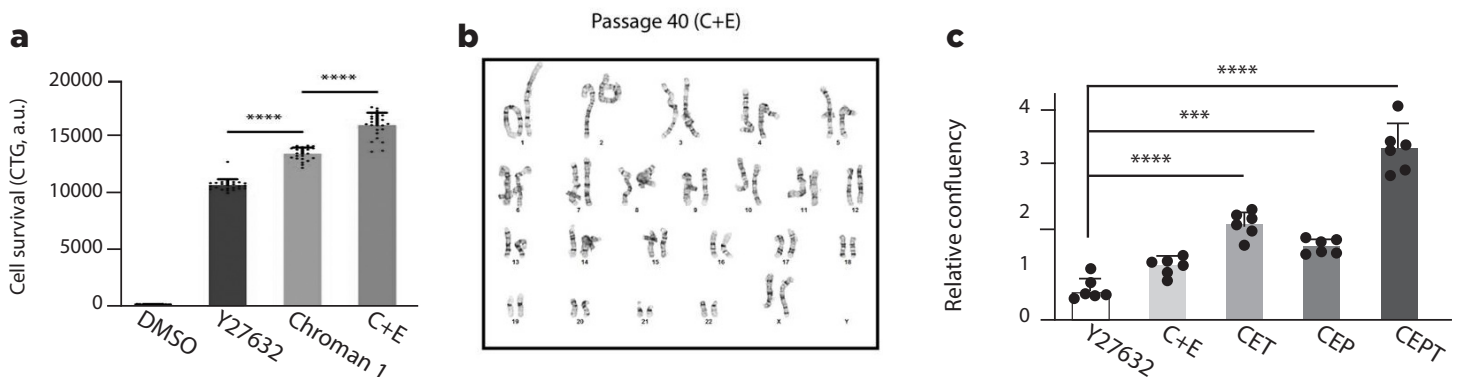


## Applications

- Routine passaging of hPSCs in culture
- Single-cell cloning and gene editing
- iPSC reprogramming methods
- Embryoid body and organoid formation
- Cryopreservation and cell banking

## Enhancing hPSC cryopreservation viability

The combination of the CET Cocktail small molecules (Chroman 1 at 50 nM, Emricasan at 5  $\mu$ M, and Trans-ISRIB at 0.7  $\mu$ M) with Polyamine Solution (CEPT) promotes clonal growth and expansion of genetically stable hPSCs. Supplementation with CEPT provides chemical protection and overcomes inherent survival issues with single-cell dissociation, offering a new approach for safe and efficient hPSC culture. Source: Yu Chen, et al. (2021) Nature Methods. May; 18(5): 528-514.



**Figure 1. Small molecules enhance cell survival.** When the C+E small molecule combination of Chroman 1 (50 nM) and Emricasan (5  $\mu$ M) was applied to hPSCs for the first 24 hours after single-cell dissociation, a significant increase in the number of viable cells was observed 24 hours post-seeding, as compared to treatment with Y27632 or Chroman 1 alone (a). Cells remained karyotypically normal when dissociated as single cells for 40 passages and treated with Chroman 1 and Emricasan during the first 24 hours of every passage (b).

**Figure 2. Cell survival.** hPSCs were seeded as single cells at an ultra-low density of just 25 cells/cm<sup>2</sup> and incubated with Y27632 and various combinations of the CEPT small molecule and polyamine components, demonstrating combinatorial improvements to cell survival (c).

## Product selection guide

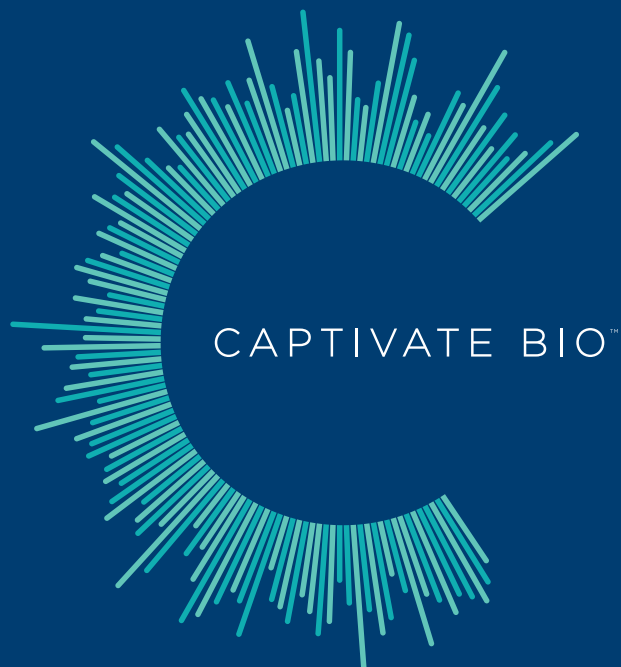
PRODUCT	PATHWAY	SIZE	CAT. NO.
BIRB796 (Doramapimod)	p38 MAPK inhibitor; T-cell proliferation	10 mg	SML16B
CHIR99021	WNT pathway activator; Inhibits GSK3	10 mg	SML01B
Chroman 1	ROCK inhibitor	5 mg	SML20A
Compound E	Gamma-secretase inhibitor	10 mg	SML02B
DAPT	Gamma-secretase inhibitor	5 mg	SML15A
Emricasan	Pan-caspase inhibitor	10 mg	SML21B
IWP-2	WNT inhibitor	10 mg	SML03B
IWP-4	WNT inhibitor	5 mg	SML04A
LDN193189 (4HCl)	BMP inhibitor; Inhibits ALK2, ALK3, ALK6	10 mg	SML05B
RepSox	TGFb/activin/nodal inhibitor	10 mg	SML06B
Retinoic Acid	RA receptor agonist	500 mg	SML07F
SANT-1	Hedgehog inhibitor	10 mg	SML08B
SB203580	p38 MAPK; autophagy; mitophagy	10 mg	SML17B
SB431542	TGFb/activin/nodal inhibitor	10 mg	SML09B
Thiazovivin	RHO/ROCK pathway inhibitor	10 mg	SML10B
Trans-ISRIB	PERK	10 mg	SML22B
Triiodothyronine Salt	Activates b1 thyroid hormone receptor	500 mg	SML11F
XAV939	TNKS/ $\beta$ -catenin inhibitor	10 mg	SML12B
Y27632 (2HCl)	RHO/ROCK inhibitor	10 mg	SML13B
Z-VAD-FMK	Pan-caspase inhibitor	10 mg	SML18A



For Research Use Only and not for therapeutic or diagnostic procedures.

**For bulk quotes or custom small molecule sourcing, please visit our website at [www.captivatebio.com](http://www.captivatebio.com), email [orders@captivatebio.com](mailto:orders@captivatebio.com), or contact our customer service team at (617) 607-4017.**





**Together, we make breakthroughs happen.**

**Captivate Bio**

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