

Effects of toxicants and psychoactive compounds on cellular health

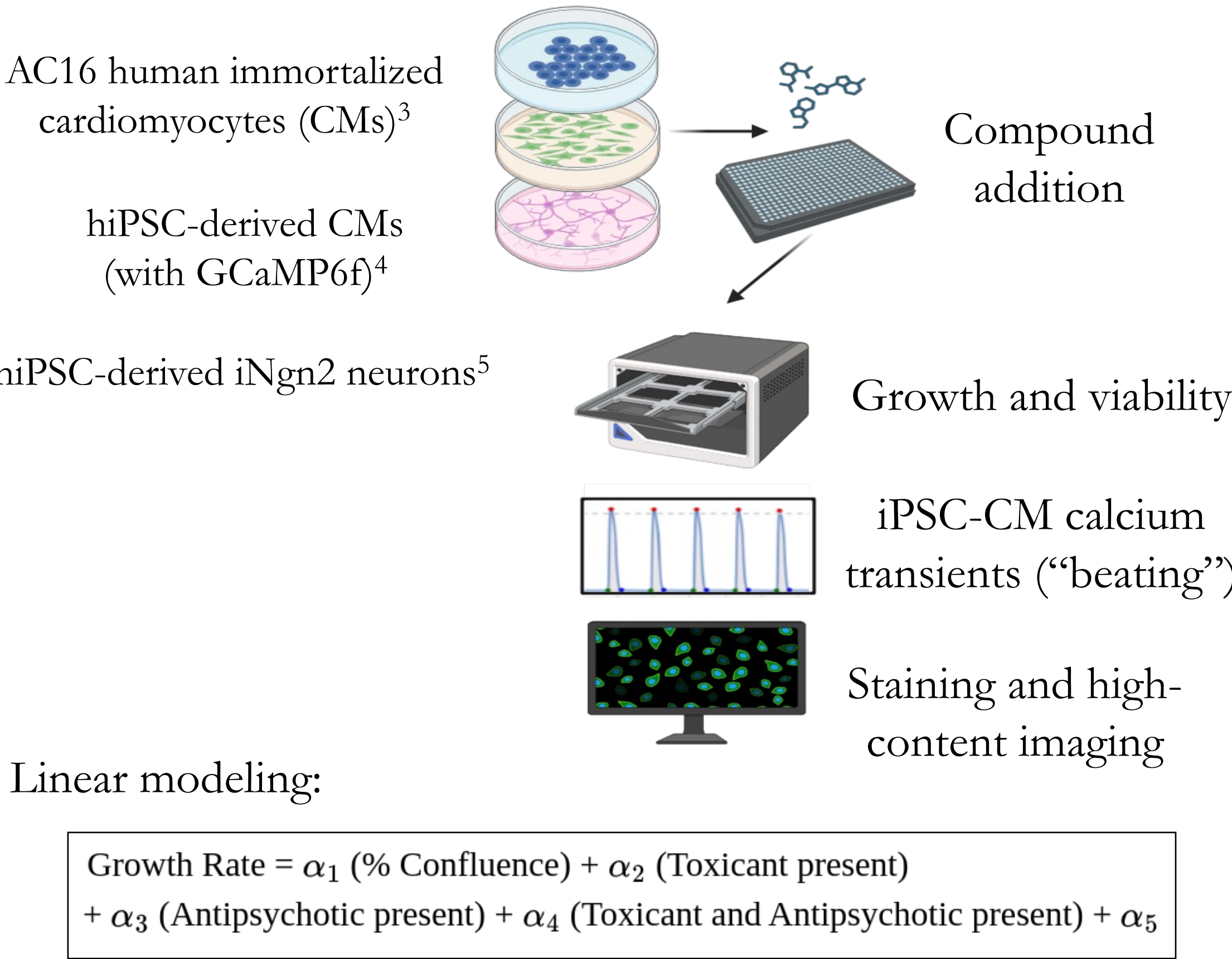
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BACKGROUND

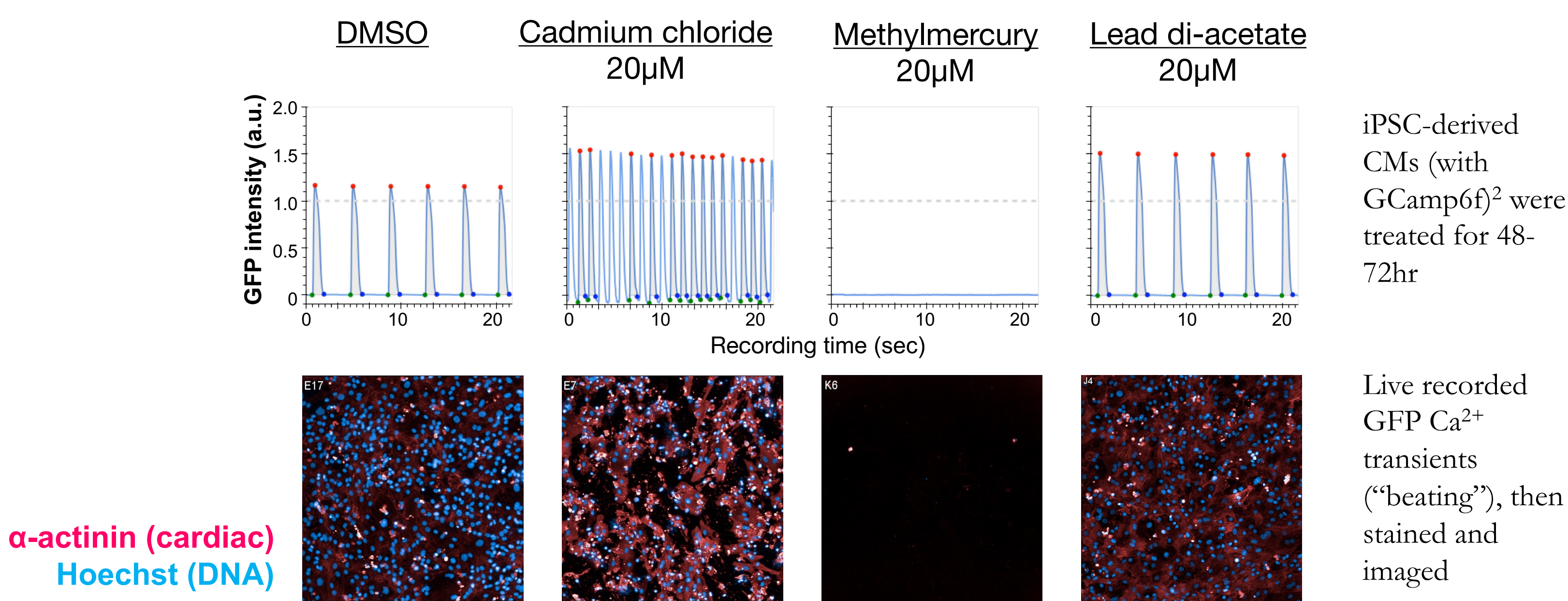
- Patients with schizophrenia (SCZ) die 10-20 years earlier than general population, and #1 killer is cardiovascular disease (CVD)¹
- Environment toxicants, especially smoking-related toxicants, contribute to CVD; SCZ patients have ↑5x rates of smoking²
- Psychiatric medications (especially antipsychotics) have metabolic & neurological side effects but are the main treatment for SCZ
- Are there non-additive interactions between toxicants & psychoactive compounds on cardiomyocyte and brain cell health?
- Focus: heavy metals in cardiomyocytes (CMs) & neurons
- Future: toxicant library (~300 compounds) from UCSF P30 EaRTH Center, in other iPSC-derived cell types

METHODS

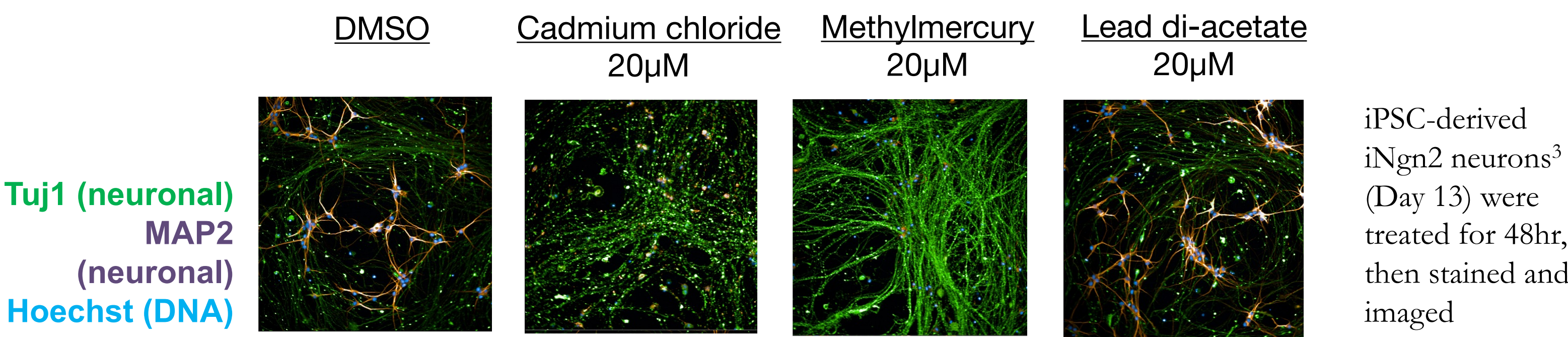


RESULTS

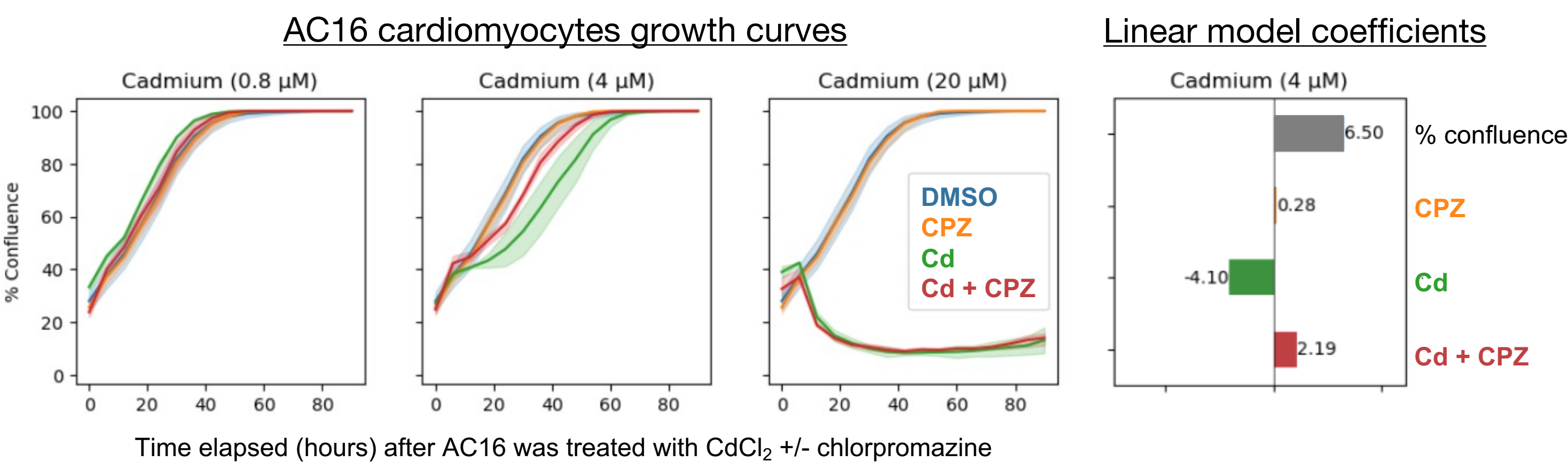
1) Different heavy metals have distinct effects on iCardiomyocytes



2) Different heavy metals have distinct effects on iNeurons



3) Evidence of chlorpromazine protecting against Cd in cardiomyocytes



DISCUSSION

Preliminary Findings:

- Different divalent, cationic heavy metals have distinct, cell type-specific effects (results 1, 2)
- Chlorpromazine is protective against cadmium chloride (results 3), which has been previously suggested in the literature⁸

Future directions

- Expand testing of combinatorial effects with analysis of high-content imaging features for high-dimensional analysis of non-additive effects
- Test other iPSC-derived brain cell types with different genetic variants of interest

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