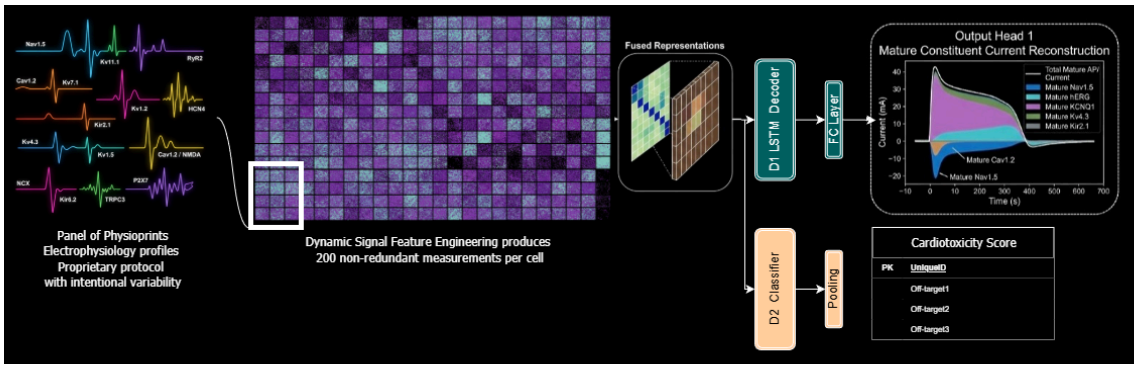

The panel of electrophysiological "Physioprints" results in intentional variability that allows for cell state determination, e.g. bioenergetics, pro-inflammatory and cell death phenotypes. Application of dynamic signal processing to these recordings produces rich physiotypic profiles. These profiles are transformed into deconvoluted "mature" explainable signatures that are predictive of cardiotoxicity liabilities, clinically relevant safety/tox markers, and more broadly a range of normal and disease physiological states.

Fluxion intends to lead 'omics-scale AI methods electrophysiology, apply new biology insights to predictive Safety&Tox, elevate cardiometabolic approaches, and resurrect neuropsychiatric drug development.

The field of cell electrophysiology has seen little AI modeling despite the ability to generate data at scale on a budget. The predominance of ion channels as the drug targets (~30% of drugs are acting on ion channels) means that this is the area of biology with high clinical relevance. We aim to dominate ion channel/bioelectricity profiling AI analytics.

Fluxion is building the ScorpION platform to unify the electrophysiological datasets.

Current platforms allow the at-scale data production, yet even basic analytic tools are lagging behind, requiring scientists manually curate and analyse the data. This is the first application of ScorpION software - to solve data QC and analytics bottleneck. ScorpION will simultaneously introduce data standardization and analytical harmonization, which will allow it to ingest more variable datasets and learn more broadly.

Fluxion introduces E-Profiler - a holistic protocol for data recording.

Like Recursion for the imaging cell profiling, Fluxion is conceptualizing the proprietary Design of Experiment patch-clamp based assay to create a panel of conditions with intentional variability to capture holistically cell membrane bioelectricity "Physioprints". Such conditions are designed to characterize the network type of interactions between players contributing to the membrane state.

Since such recordings are time-resolved, feature engineering and subsequent modeling are well aligned with other dynamic processes, like particles physics or autonomous vehicles.

"Physioprints" recordings result in >200 quantitative features per cell. This data can be embedded into LSTM NN and Transformer models to solve experimental and novel biology problems.

Fluxion seeks to standardize the CiPA framework for cardiotoxicity assessment.

The regulators introduced the initiative to revamp cardiotoxicity profiling, implementing Novel Approach Methodologies (NAMs) that call for the more predictive cell models, iPSC-derived cardiomyocytes (CM-iPSCs) and development of AI-aided analytics. We propose to develop in-silico maturation and QC models for CM-iPSC models that transform the data from phenotypically foetal cells to adult + disease-relevant plate-based assay. Such assay should deconvolute the interplay between an ensemble of ion channels in cardiomyocytes and ascertain additional off-target liabilities.