



## Advanced *In Vitro* Models

### Available Models:

- Airway: MucilAir™ and EpiAirway™
- Dermal: EpiSkin® and EpiDerm
- Ocular: EpiOcular and HCE
- Oral: EpiOral™ and EpiGingival
- Vaginal: EpiVaginal™

### Endpoints:

- Viability: MTT, TEER, resazurin metabolism, lactate dehydrogenase release
- Cytokine release
- Histology and morphology
- Scanning electron microscopy
- Fluorescence microscopy
- Bioanalysis: LC-MS and PCR
- Sodium fluorescein passage

Advanced *in vitro* models have the potential to revolutionize safety and efficacy testing. Charles River is investing in advanced models for regulatory toxicology and investigative and mechanistic toxicology testing.

As part of our commitment to the 3Rs and integrated toxicology, we continue to build on our scientist's knowledge and experience in *in vitro* toxicology to create innovative testing solutions.

These models are widely used in support of pharmaceutical efficacy and consumer product testing, identification of lead candidate or formulation optimization and operator exposure (OPEX) and worker safety assessments.

### 3D Tissue Models

As a leader in *in vitro* regulatory toxicology, Charles River has been utilizing this scientific experience and leadership to develop a testing strategy to create innovative study designs in support of investigative and mechanistic toxicology to answer scientific questions and resolve scientific roadblocks.

Working in partnership with our key technology providers, EpiThelix, SkinEthic™ and MatTek, we have created innovative toxicology testing plans for a range of applications (e.g., airway, dermal, ocular, oral, vaginal). Our scientists are ready and able to develop unique testing plans for individual client products. Diseased tissue versions are also available for skin (e.g., melanoma and psoriasis) and lung (e.g., COPD, asthma, cystic fibrosis, and cancer) models.

### *Ex Vivo* Tissues

Charles River has access to human and animal (*ex vivo*) tissues for drug delivery and metabolism. Programs have been created for intestinal, vaginal, buccal, and skin drug delivery and agrochemical/chemical safety testing.

### Endpoints

Depending on the testing strategy, a combination of endpoints is available, achieved by traditional and novel techniques. Endpoint examples listed are not exhaustive. Our scientists welcome the challenge of novel products and discussion of how we may be able to answer scientific questions, creating innovative study designs to suit client needs.