The Centre for Drug Candidate Optimisation (CDCO) is a collaborative research centre based within the Monash Institute of Pharmaceutical Sciences that undertakes drug candidate optimisation to accelerate and enhance drug discovery and development for commercial, not-for-profit and academic research organisations. Drug candidate optimisation is a critical value-creating step in drug discovery/development which enhances the future developmental and commercial potential of candidate drugs through optimisation of their metabolic, physicochemical, pharmacokinetic and bioavailability properties.
Mission statement: To play a significant role in translating Australian chemical and biological discoveries into viable drug candidates that are well-positioned for further development.

The CDCO was conceived to foster scientific innovation in drug discovery and development through large multi-disciplinary collaborative programs, to provide translational expertise on absorption, distribution, metabolism and excretion (ADME) properties of drug candidates.

Physiochemical profiling
Physiochemical profiling has become an integral part of drug discovery, leading to property optimisation and rank ordering for ‘drug-like’ characteristics.

Drug metabolism, metabolite profiling, and metabolic drug-drug interactions
Rapid metabolism is a major limiting feature of many new drug candidates and can lead to low oral bioavailability, a short half-life, or the production of potentially active or toxic metabolites. Serious adverse events can also arise through metabolic drug-drug interactions. The CDCO offers a range of approaches to assess the metabolism of compounds during early lead identification through to candidate selection and optimisation.

Bioavailability and pharmacokinetics
Appropriate ADME properties are essential to ensure efficacy and minimise toxicity for the desired route of administration. Coupled with the results from physiochemical and metabolic profiling, ADME data enables the early identification of compound liabilities, providing a basis for structural modifications or for the early initiation of strategies to overcome these problems.

Bioanalysis
Rapid, specific and quantitative analysis of drug candidates is required to support all aspects of ADME lead optimisation. The CDCO is equipped with specialised LC-MS/MS instrumentation to enable the rapid development of specific methods for the analysis of candidate drugs and their metabolites in complex biological matrices.

"CDCO’s expertise in drug candidate optimisation is critical for guiding decision making in our projects and to this end results are always delivered in a professional and timely manner."
Dr Ian Street, Chief Scientific Officer, Cancer Therapeutics CRC, Melbourne, Australia

“They provide guidance on study design and interpretation of results in the context of the whole project. This approach to plan for the right data at the right time has helped us to achieve our project milestones.”
Dr Andrew Harvey, Vice President Drug Discovery, Bionomics Limited, Adelaide, Australia

“CDCO’s pro-active and flexible attitude, as well as the discussion and generation of ideas and proposal of potential studies for further progression of projects is a real "added value".”
Dr. Eric Chatelain, Head of Drug Discovery, Drugs for Neglected Diseases Initiative (DNDi), Geneva, Switzerland

Contacts
Director
Professor Susan Charman
Professor Charman has more than 20 years experience working in ADME lead optimisation and managing large collaborative drug discovery research programs. With an international reputation in the field, Professor Charman has published prolifically, is a regular invited speaker at major national and international conferences and frequently consults for the industry on matters related to lead optimisation, candidate selection and drug development.
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Operations Manager
Dr Andrew Powell
Dr Andrew Powell has been the Operations Manager at the CDCO since 2010. Prior to this, Andrew worked in the biotechnology sector managing preclinical efficacy and toxicology programs, GMP manufacture and regulatory submissions. Dr Powell holds a PhD in Physiology from Monash University and has over ten years experience in scientific and management roles working within the academic and biotechnology sectors.
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