RSA
Better people

RSA Talent Equity®

Contract Research Organisation

Preclinical Operational and Scientific Talent

Foreword

Chris Molloy, CEO

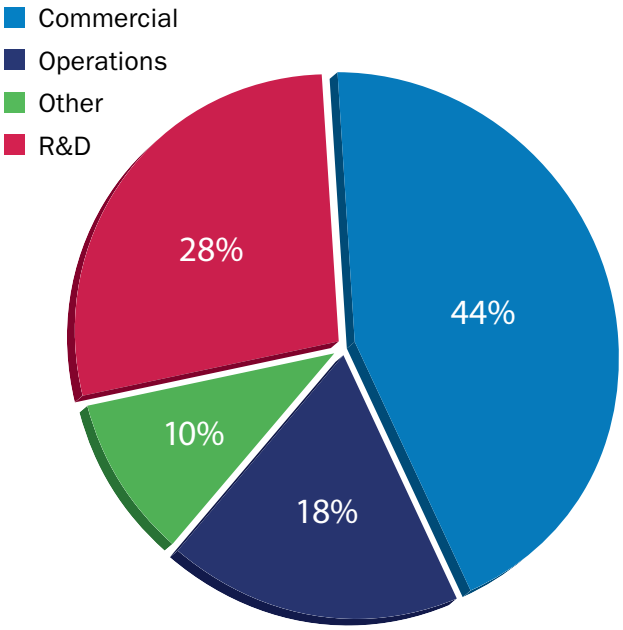
RSA's Talent Equity™ reports explore the collective importance of executives and skills in the life sciences industry. In the latest of our reports, we examine how talented people are driving growth in the contract research sector.

Increasingly, sponsors are turning to Contract Research Organisations (CROs) as a source of scientific expertise. This is, in part, thanks to talented science, operations and commercial leadership within these organisations; helping to turn their relationships with their sponsors from that of client/service provider into partnerships.

We recognise the importance of executive talent in nurturing these relationships and broader success within the contract research industry, which is why we've produced this report, based on original research, to provide an insight into what makes a talented CRO executive.

We are the world's largest boutique global talent firm for the life sciences industry. We use our research to further our understanding of what makes a talented executive so that we can use that knowledge to better advise and inform our clients.

Our recent assignments in CROs



To learn more about our knowledge-based approach and our advisory capability see our website or e-mail HQ@theRSAgroup.com

Industry Overview

Evolving market place

At its inception in the late 70s, the CRO industry operated on a contract-based, 'rent-a-scientist' model, offering tactical capacity expansion and a fixed-to-varied cost transition for its sponsors. In the past few years the industry's role has undergone a strategic alteration - an increasing number of sponsors view CROs as their strategic partners, rather than just vendors. According to Paraxel's Strategic Partnerships report, this model expands the core benefits of outsourcing, efficiency and cost savings; and offers sponsors scientific expertise at every level, cost predictability and global consistency.

Service segmentation

Preclinical services account for 15% of the CRO market in the United States (IBISWorld US CRO Industry Report). However, we believe that the sub-sector represents a larger share if we were to look at the sector's activity and not the total revenue generated.

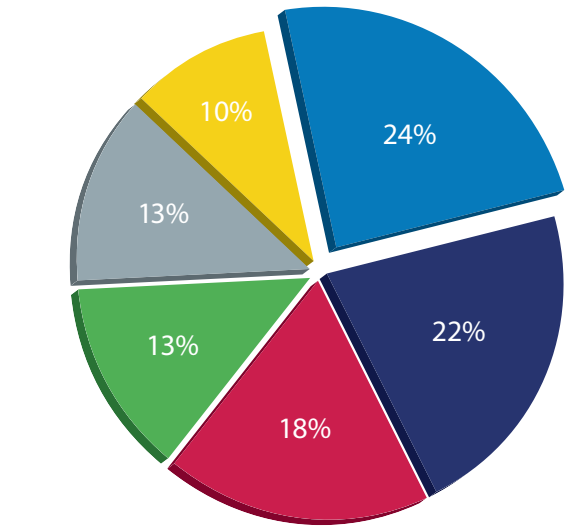
In our opinion, the sub-sector's share is underestimated due to the lesser cost of projects on the preclinical side. These services include research, discovery, drug safety and toxicity testing *in vitro* and *in vivo* models. **Clinical services** represent 41%, or the largest market share and include testing of developmental-stage therapies or medical devices on human participants through Phase I-IV of clinical trials. The rest of the CRO market consists of post marketing surveillance services (15%) and other services (29%).

Growth drivers

The CRO industry is expanding thanks to increased R&D spending by biopharmaceutical companies, together with a need for cost efficiency. Several key factors influence the R&D spending trends: big pharma's effort to compensate for the lost revenues from the recent patent cliff, robust funding for biotech companies and an increased number of regulatory approvals. Last year there were about 4,620 drugs in Phase I-III, which is a 35% increase since 2008. In 2014, the FDA approved 41 therapies, the highest in 18 years.

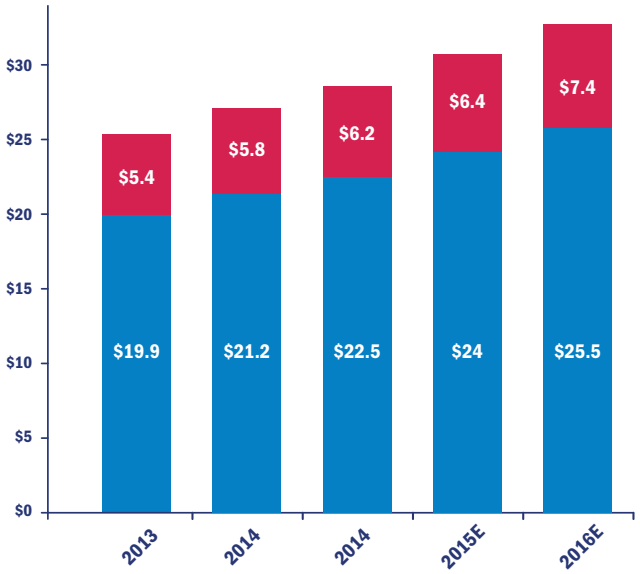
Most outsourced CRO services 2015

Source: Contract Pharma Outsourcing Survey 2015



CRO market 2013-2017

Source: Equity research estimates Harris Williams & Co



CAGR Clinical 6.4%
CAGR Preclinical 7.4%

Industry tailwind

Between 2009 and 2013 the biopharmaceutical industry divested over 156,000 jobs (WSJ) - and that was only in the United States. The jobs eliminated included R&D, and sales & marketing forces. These cuts were due to redundancies created by mergers & acquisitions (M&A), which hit a $212 billion record in 2014. 2015 smashed that record, surpassing $221 billion during the first half of the year and before the Pfizer/Allergan tsunami. This trend creates a scientific talent source for CROs. In some cases, CROs go beyond talent sourcing and acquire assets, pipeline and operations facilities from their sponsors. In 2014 Evotec entered a deal with Sanofi, acquiring its Toulouse facilities, including a library of over one million compounds and its entire scientific team. This is an evolution of a transaction in 2010 between Aptuit and GSK in Verona.

Preferred career choice

Due to the dynamic, positive shift for the preclinical CROs, many pharma industry professionals are seeking to join the industry. CROs have become more attractive than pharma, offering more job security and variety. Moreover, the **quality of science** at preclinical CROs is increasing and professionals making the career switch gain an opportunity to make a bigger impact at a smaller, science-driven organisation.

Increased outsourcing

The current global economic environment drives the biopharmaceutical industry to deliver quality, accountability and value for money. This trend forces pharmaceutical and biotech companies to move away from vertically integrated strategy and to focus on their core competencies. In turn this expands the outsourced portion of R&D to CROs. The 2015 Outsourcing Survey conducted by Contract Pharma indicated that, out of 208 CRO professionals, 80% experienced an increased demand for outsourcing services this year.

Key Talent Equity® Themes

We have selected three major roles which define **how sponsors evaluate CROs:** the COO, CSO and the CEO. Sponsors are keen to know that the quality and capacity they need is there, the science is strong and whether the CRO has effective leadership and longevity.

Unlike many service sector comparators we have found that the individuals who dominate in COO, CSO and CEO roles **share many common backgrounds and skills.** In fact the profiles share more similarity with biotech than other typical service sectors. Where they differ is their experience of big pharma, their residency time in the CRO sector and their commercial backgrounds.

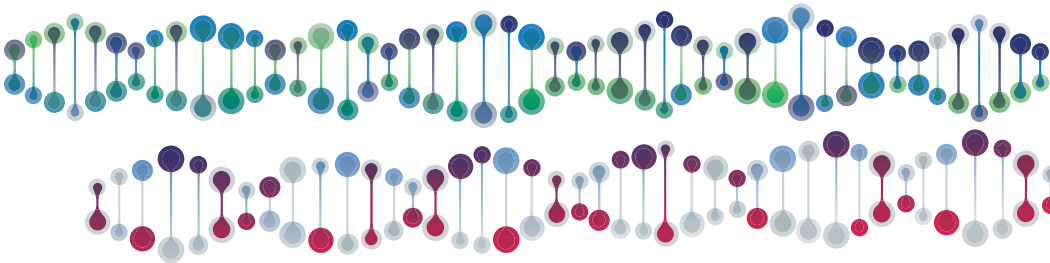
Over half of the CEOs in our review have – like in our EU biotech report – been founders of their firms.

Operations executives tend to have the longest residency time in the CRO sector and are the most likely to be recruited from another CRO or be 'grown internally'.

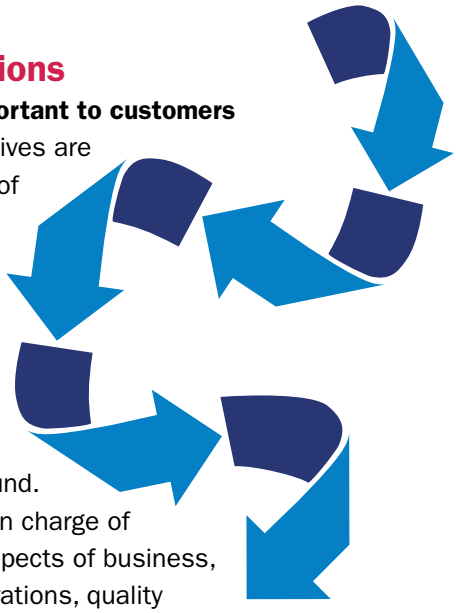
A vast majority of all three roles have PhDs but CSOs, quite naturally, have the most robust pharma and academic expertise.

Summary table of background and expertise across COO, CSO and CEO roles as a % of the peer group (unless stated otherwise)

ROLE	COO	CSO	CEO
Tenure (median years)	11.5	8	8.5
Publications (average)	8	31	18
Academic background	43%	67%	29%
Biotech experience	14%	25%	60%
Big pharma experience	43%	76%	50%
Large CRO experience	57%	42%	33%
Internal career	29%	0%	0%
Commercial acumen	14%	33%	100%
Other experience	0%	0%	29%
Founders	0%	8%	57%
PhDs	71%	100%	79%



COO/Operations



Why they are important to customers

Operations executives are the ***beating heart*** of their organisation. These individuals are ***scientifically savvy***, with an education at PhD level, often with a post-doctorate research background. Not only are they in charge of the operational aspects of business, such as R&D operations, quality control and supply chain, their responsibilities also include an important ***liaison between the internal R&D and the external client***.

How they are developed

The operational talent peer group typically acquired their skillset at a ***large global CRO*** such as Covance, WuXi or PPD, or in ***big pharma*** such as AstraZeneca, Eli Lilly or Merck. In some cases, the executives ***grow internally***, starting as scientists and progressing into senior management operational roles.

Where they are found

This talent group is a key asset, usually brought in from outside and rarely home-grown. In addition to their niche scientific expertise, operational leaders gain experience in ***a broad spectrum of therapeutic areas*** through their work at big pharma or CROs.

CSO/Science

Why they are important to customers

Science heads are a ***brand face*** for their organisation. All of the featured scientific leaders have an ***advanced scientific expertise*** acquired through a PhD in life sciences and, in some cases, through an academic research career. They are well published and recognised as ***thought leaders*** in their respective fields.

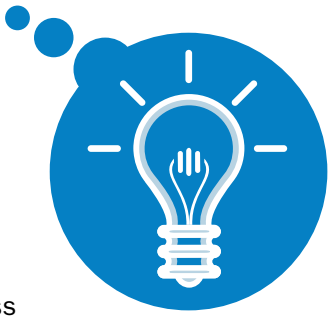
How they are developed

Outside of academia, these professionals acquire their commercial expertise in big pharma such as GSK, Pfizer or Sanofi. Additionally, they equip themselves with ***early stage biotech experience***, acquiring an essential commercial acumen and an ability to ***understand the needs of smaller biopharmaceutical clients***, one of the growing sectors for the pre-clinical CROs.

Where they are found

Similarly to the operations executives, science leaders learn about CRO business from their experience at a large CRO such as Charles River or MSD. This, in addition to a big pharma experience, enables them to be well versed in ***multiple therapeutic areas***.

CEOs/Commercial



Why they are important to customers

CEOs of preclinical contract research organisations are the ***dedicated risk takers*** – almost 60% of this peer group are ***founders*** – they build a business and stay to run it. Their ***advanced scientific education*** allows them to realise the opportunity and their commercial acumen enables them to seize it. ***Other experience*** acquired from corporate development or finance backgrounds helps the companies' leaders achieve growth targets and operational efficiency in this acquisition and cost driven environment.

How they are developed

The entrepreneurial experience and/or the ***biopharma*** boot camp grants CEOs commercial expertise. Fewer executives from this peer group have a large CRO background compared to the operations and science peer groups. Yet half of the CEOs served at a big pharma such as Pfizer, Bayer or J&J at some point of their careers.

Where they are found

Many CEOS actually founded their CRO companies. Their backgrounds are the most diverse of the three groups with biotech, pharma and consulting combinations on display. The key experience they all share is commercial awareness and business management.

Objective methodology

Our 'Preclinical CRO' RSA Talent Equity™ analysis identifies the industry's leading scientific and operational talent worldwide. Through our study of the preclinical CRO market, we have identified 11 Scientific, 8 Operations and 13 chief executives who drive their companies' success in the early-stage CRO field.

We gathered information for this report using both primary and secondary research, including comprehensive sources such as company literature, databases, investment reports and business journals. For the purpose of this report we conducted interviews with key industry officials on the CRO and sponsor side.

To identify the key success traits of the operational and scientific talent in the preclinical CRO industry, we studied 163 companies across the globe. We picked 14 preclinical/full-service CROs, with an organisational size of less than 1000 FTEs and with multiple preclinical capabilities. We identified companies that have at least two preclinical services, or a 'one-stop-shop' capability score. To identify our top talent picks, we applied objective metrics, our talent expertise and industry knowledge in the selection process.

Our company picks (in alphabetical order)

Company Picks	Small/Large Molecule Production	*In Vivo* testing	Metabolism	Preclinical GLP/Toxicity	Biotechnology	Pharma	Medtech
United States							
Absorption Systems	■	■	■	■	■	■	■
Agilux Laboratories	■	■		■	■	■	
Calvert Labs	■	■		■	■	■	
KCAS	■	■		■	■	■	■
Seventh Wave Laboratories	■	■	■	■	■	■	
Surpass	■	■		■	■	■	■
Global							
Aptuit	■	■			■	■	
Axxam	■	■			■	■	
BASi (Bioanalytical Systems Inc)		■		■	■	■	
Crown BioScience	■	■	■		■	■	
Evotec	■	■		■	■	■	
Frontage Labs		■	■	■	■	■	
HD Biosciences (HDB)		■	■	■	■	■	
PharmaLegacy Laboratories		■	■		■	■	

RSA Talent Equity®

Our 14 company picks (in alphabetical order)

Absorption Systems
Aptuit
Agilux Laboratories
Axxam
BASi (Bioanalytical Systems Inc)
Calvert Labs
Crown BioScience
Evotec
Frontage Labs
HD Biosciences (HDB)
KCAS
PharmaLegacy Laboratories
Seventh Wave Laboratories
Surpass

Absorption Systems is a preclinical CRO that develops and implements research tools. The company has locations in the United States and Panama. Absorption Systems serves pharmaceutical, biotech and medtech industries. The company's client list includes small virtual pharma companies, large pharma and speciality CROs.

No. of FTEs: 110; Capability Score #: 4

Aptuit is a global drug discovery and development services company. Aptuit has offices in the United States, India, Italy and the United Kingdom. The company's services include medicinal and computational chemistry, discovery pharmacology, drug metabolism and pharmacokinetics, analytical discovery support and preclinical bioscience services. Following the increase in demand, the company has recently expanded its UK facility. Last year Aptuit also sold two of its manufacturing sites to AMRI for $60 million in order to focus on its work in discovery and development.

No. of FTEs: 700; Capability Score #: 4

Agilux Laboratories Inc is a privately held CRO focused on bioanalytical and PK/PD testing services for the biotech and pharmaceutical industries. Founded in 2007, Agilux is based in the United States and is funded by the private equity firm Ampersand Capital Partners.

No. of FTEs: 50-200; Capability Score #: 3

Axxam SpA is a privately owned CRO headquartered in Italy and with business development offices in Europe, United States and Japan. The company was founded in 2001, as a spin-off from the Bayer Group. Axxam provides services to pharmaceutical, animal health, cosmetics and nutrition companies.

No. of FTEs: 50-250; Capability Score #: 3

BASi (Bioanalytical Systems Inc) is headquartered in the United States. BASi has been a public company since 1997. The company provides CRO services and niche instrumentation, serving the life science industries. Through a number of acquisitions, BASi entered the EU market with a location in England and also entered the preclinical toxicology market. The instrumentation segment designs, develops, manufactures and markets *in vivo* sampling systems and accessories.

No. of FTEs: 50-250; Capability Score #: 3

Calvert Labs is a preclinical CRO, headquartered in the United States, offering a wide range of lead identification, lead optimisation and preclinical services. The company's expertise spans across multiple therapeutic areas, including ophthalmology, where Calvert is highly regarded in the marketplace. The company has also developed novel ocular techniques in partnership with Cornell University.

No. of FTEs: 50-200; Capability Score #: 2

Crown Biosciences is a Shanghai-based preclinical CRO established in 2006. The company provides drug discovery and development services to biotech and pharmaceutical markets, focusing on oncology and metabolic therapeutic areas. The company has strategic partnerships with Xstrahl and Horizon.

No. of FTEs: 200-500; Capability Score #: 4

Evotec AG is a publicly traded contract drug discovery and development company, founded in 1993 and headquartered in Germany. Evotec provides drug discovery solutions to the pharmaceutical, biotechnology and academic sectors. It operates in Europe, India and the United States.

No. of FTEs: ~600; Capability Score #: 4

Frontage Labs is a CRO serving pharmaceutical and biotech industries. The company specialises in early phase drug development, providing bioanalytical laboratories, discovery stage and preclinical drug metabolism and pharmacokinetics, clinical studies and product development support. Frontage was established in the United States in 2001 and has research facilities in the United States and China.

No. of FTEs: 300; Capability Score #: 4

HD Biosciences (HDB) is a Shanghai-based CRO specialising in early stage research. The company has developed comprehensive technology platforms for its drug discovery services. Founded in 2002, HDB is backed by number of corporate venture arms such as Pfizer Ventures and Lilly Asia Ventures. The company's clients include both pharma and biotech.

No. of FTEs: 200-500; Capability Score #: 2

KCAS is a CRO, focused on developing and validating robust small molecule, large molecule and biomarker methods for preclinical and clinical studies. KCAS provides bioanalytical research for pharmaceutical and biotech companies of all sizes, as well as medical device and animal science companies. The company is located in the United States.

No. of FTEs: 50-200; Capability Score #: 2

PharmaLegacy Laboratories is a preclinical CRO founded in 2008. The company provides specialty pharmacology services in multiple therapeutic areas, such as autoimmune, oncology and metabolic. PharmaLegacy is backed by Great Pond Management Company LLC, a US based Private Equity firm. The company's research facilities are based in China.

No. of FTEs: 50-200; Capability Score #: 3

Former Pharmacia/Pfizer nonclinical scientists established Seventh Wave Laboratories in 2003. The company provides drug efficacy, safety, systemic exposure and metabolism services. Seventh Wave is headquartered in the United States and has recently expanded its research facilities.

No. of FTEs: 50-250; Capability Score #: 4

Surpass is a preclinical CRO, specialising in services for medical devices, biopharmaceuticals and regenerative medicine. The company is composed of two, United States-based, preclinical CROs: Surpass and LyChron in California's Silicon Valley. Surpass provides translational research in large animal models and human cadavers with specialised expertise in surgical and interventional procedures.

No. of FTEs: 200-500; Capability Score #: 2

CSO, COO & CEOs

(in alphabetical order of company name)

Company	Science	Operations	CEO
Absorption Systems	*Ismael Hidalgo*	*Sid Bhoopathy*	*Patrick Dentinger*
Agilux Laboratories	*Adrian Sheldon*	*Richard LeLacheur*	*Jim Jersey*
Aptuit			*Jonathan Goldman*
Axxam	*Russell Thomas*		*Stefan Lohmer*
BASi		*James Bourdage*	*Jacqueline Lemke*
Calvert Labs	*Charles Spainhour*		*Michael Recny*
Crown Bioscience	*Jean-Pierre Wery*	*Yining Qi*	*Alex Wu*
Evotec	*Cord Dohrmann*	*Mario Polywka*	*Werner Lanthaler*
Frontage Labs		*John Lin*	*Song Li*
HD BioSciences	*Peiyuan Lin*		*Xuehai Tan*
KCAS	*Yansheng Liu*		*Terry Osborn*
PharmaLegacy Laboratories	*Mei-Shu Shih*	*Jeff Duan*	
Seventh Wave Laboratories	*Kristen Nikula*	*Kim Sagartz*	*John Sagartz*
Surpass	*Mark Cunningham*		*Tim Pelura*

Sid Bhoopathy

Absorption Systems, COO

Background: *Operations*

Key traits: *Large CRO experience, scientific expertise, process development*

Education: *BS Pharmacy, Kakatiya University; PhD in Pharmaceutics, Virginia Commonwealth University*

As COO of Absorption Systems, Sid oversees the convergence of the commercial, technical and scientific aspects of the company to execute its strategic and tactical growth plans. Prior to his appointment as COO, he served as VP of Operations. He has held various positions of increasing responsibility within the company since 2004.

Academic experience:
No. of publications: 3

Industry experience:
Prior to joining Absorption Systems, Sid served as Research Scientist at PPD, where he developed and validated bioanalytical methods.

Honours & awards:
Emerging Leader in the life sciences industry in Pennsylvania, Pennsylvania Bio, 2012
Excellence in Business Operations, Absorption Systems, 2009.

Ismael Hidalgo

Absorption Systems, CSO

Background: *Academic/ research*

Key traits: *Scientific expertise, big pharma experience, thought leader*

Education: *PhD Pharmaceutical Sciences, University of Southern California; Postdoctoral Fellowship in Pharmaceutical Chemistry, University of Kansas*

Ismael co-founded Absorption in 1996. As the company's CSO, he is leading the company's strategic planning and execution and managing the scientific and technical operations. His work in pharmaceutics and *In vitro* pharmacokinetic models is at the core of Absorption Systems' business. He is famous for pioneering the Caco-2 cell monolayer, an *In vitro* model that predicts human oral drug absorption.

Academic experience:
No. of publications: 33

Big pharma experience:
Prior to Absorption Systems, Ismael held several research positions at GSK; as a senior investigator, he led ADME support for discovery scientists.

Patrick Dentinger

Absorption Systems, CEO

Background: *Commercial*

Key traits: *Commercial experience, founder, CRO experience*

Education: *BS Pharmacology, University of California Santa Barbara*

Patrick is co-founder, CEO and President of Absorption Systems. He founded the company in 1996 and is responsible for its business strategy, managing growth and expansion.

CRO industry experience:
Patrick served as a Business Development Manager at IBAH Inc, a product-development services provider to the pharmaceutical and biotechnology industries. The company was acquired by Omnicare.

Commercial experience:
He served as a manager in the consumer products group at Affinity Biotech, a specialty pharmacy and home infusion provider for patients with haemophilia or other bleeding disorders.

Honours & awards:
2002 Ernst and Young Entrepreneur of the Year Award.

Richard LeLacheur

Agilux Laboratories, Senior Director, Bioanalytical Operations

Background: *Academic/ research*

Key traits: *Regulated bioanalysis expertise, regulatory expertise, large CRO experience*

Education: *Post-doctorate fellowship at Los Alamos National Laboratory; PhD in Chemistry, University of North Carolina at Chapel Hill; BA in Physical Sciences, Colgate*

Richard joined Agilux as Senior Director of Bioanalytical Operations in 2012, where he leads the discovery and GLP bioanalysis groups. He also heads the regulatory and operational processes and improvements within the company's GLP bioanalytical labs.

Academic experience:
No. of publications: 2

Co-founder and instructor for the High Resolution Mass Spectrometry course at the American Society of Mass Spectrometry.

CRO industry experience:
Prior to joining Agilux Richard was the Laboratory Director and VP at Taylor Technology, (inVentiv Health), where he developed new analytical methods for sample analysis. Earlier, he was a senior technical consultant at Tandem Labs (Covance).

Adrian Sheldon

Agilux Laboratories, Associate Director, In Vitro Metabolism, Discovery Services

Background: *Academic/ research*

Key traits: *Large CRO experience, biotech experience, drug discovery expertise*

Education: *PhD Physiology and Cell Biology, Boston University; AB Biology Harvard University*

Adrian joined Agilux as an Associate Director, *In Vitro* Metabolism and Discovery Services, in 2009. His areas of expertise include bioanalytical, drug discovery and assay development.

Academic experience:
No. of publications: 5

CRO industry experience:
Prior to Agilux, Adrian served as the Principal Scientist and Associate Director at Charles River. During his seven year career with the company, Adrian established and led *In Vitro* ADMET services' business unit.

Biotech experience:
Earlier, Adrian had been a member of the research team as a senior investigator at Arqule, an oncology-focused biotech firm. Prior to Arqule, he had served as a Senior Scientist at OsteoArthritis Sciences Inc, a biotech that develops an arthritis treatment.

Jim Jersey

Agilux Laboratories, CEO

Background: *Research*

Key traits: *CRO Experience, Founder, Biotech Experience*

Education: *BSc, University of Maryland; PhD Aquatic Environmental Chemistry, University of North Carolina at Chapel Hill*

Jim co-founded Agilux Laboratories in 2007 and is the company's President and CEO. Agilux has grown rapidly, doubling the size of its animal research facility, increasing the number of species used in studies and improving its discovery efficiency.

Academic experience:
No. of publications: 6

Biotech experience:
His previous experience included a president role at Primedica Corporation, a subsidiary of Genzyme Transgenics, where he founded and managed the bioanalytical services division.

CRO industry experience:
Prior to Agilux, he served as a general manager at Tandem Labs New England. Additionally, he served as a Senior Director, Bioanalysis, at Charles River Laboratories, where he founded the Proteomic Services unit.

Jonathan Goldman

Aptuit, CEO

Background: *Academic/ clinical*

Key traits: *Biotech experience, CRO experience, therapeutic expertise*

Education: *BSc Immunology; MBBS; MD Cardiology University of London; MBA Columbia University and University of California Berkeley*

Jonathan joined Aptuit as the CEO in 2013. He is responsible for establishing new partnerships with clients and pursuing the company's strategic acquisitions.

Academic experience:
No. of publications: 100

Associate Clinical Professor of Medicine in the division of Cardiology at the University of California, San Francisco; Honorary Fellowship of the Faculty of Pharmaceutical Medicine of the Royal College of Physicians of the United Kingdom.

CRO industry experience:
Prior to Aptuit, he held several executive positions at ICON. During his role as the Global Head of Business Development he led the development of partnerships with pharma and biotech companies. His former roles at ICON included Executive Vice President, Operations, Strategic Programs and Chief Medical Officer of Medical Imaging.

Biotech experience:
Earlier, he served as Chief Medical Officer of Point Biomedical, a development-stage biopharmaceutical company responsible for discovering and developing microsphere-based pharmaceuticals.

Russell Thomas

Axxam, Director of Discovery Research

Background: *Drug discovery*

Key traits: *Big pharma experience, biotech experience, multiple therapeutic area expertise*

Education: *PhD in Organic Chemistry, University of Exeter; BSc in Chemistry*

Russell Thomas joined Axxam as the Director of Discovery Research in 2015. He leads the company's discovery services and discovery research partnerships. Russell has both preclinical and clinical research expertise. Throughout his career he worked in multiple therapeutic areas such as neuroscience, antibacterial and oncology.

Academic experience:
No. of publications: 9

Patents:
1

CRO industry experience:
Prior to Axxam, Russell served as the VP of Lead Discovery at Proteros Biostructures, a private company that provides services and proprietary technologies to support drug discovery. Previously he served as Head of the Medicinal Chemistry department at Evotec, where he was responsible for scientific management, budget and business development.

Biotech experience:
Russell held multiple roles at Siena Biotech, a drug discovery and development company focusing on oncology and neurodegenerative therapeutic areas. He headed the company's medicinal chemistry department, with a responsibility for scientific operations, chemistry optimisation and preclinical development.

Big pharma experience:
He was the Group Leader at GSK, Italy. During his tenure he led the bacterial pathogenicity disease research team across multiple chemistry groups and research centres.

Stefan Lohmer

Axxam, CEO

Background: *Drug discovery*

Key traits: *Pharma experience, founder, genomics expertise*

Education: *BSc, Molecular Biology and Biochemistry; PhD Biochemistry and Molecular Biology, Max Planck Institute*

Stefan co-founded Axxam in 2001. He is the Chairman of the Board of Directors and Chief Executive Officer. He also oversees the Discovery Research group.

Academic Eexperience:
No. of publications: 7

Patents:
21

Big pharma experience:
Prior to Axxam, he served as Head of the Assay Development unit at the Bayer Research Centre and a Head of Genomics worldwide for Bayer AG. While at Bayer, Stefan established and managed Bayer's external genomic alliances with Millennium and Lion Bioscience.

James Bourdage

BASi, VP Bioanalytical Operations

Background: *Research*

Key traits: *Big pharma experience, large CRO experience, scientific expertise*

Education: *PhD in Immunochemistry; MS Immunochemistry; BS Med Tech University of Illinois at Urbana-Champaign*

James has been the Vice President of Operations at BASi since June 2, 2014. He is leading global laboratory operations and manages quality processes, staff development, bioanalytical methods, and regulated services.

Academic experience:
No. of publications: 10

James is a member of the American Society of Clinical Pathologists and the American Association of Pharmaceutical Scientists.

CRO industry experience:
Prior to joining BASi, James was Executive Director Biopharmaceutical CMC Solutions at Covance, where he was responsible for drug development services.

Big pharma experience:
James served as a Global Research Advisor at the Laboratory for Experimental Medicine at Eli Lilly where he was responsible for biotherapeutic immunogenicity and biomarker assay development to support global clinical trials. Prior to Eli Lilly, he was a senior research scientist at Pharmacia (Pfizer).

Other experience:
James served as a Senior Director, Bioanalytical Sciences at Pharmathene, a biodefense company with government contracts.

Jacqueline Lemke

BASi, CEO

Background: *Corporate development*

Key traits: *Financial acumen, change management, strategic acumen*

Education: *BS Finance and Accounting, Drexel University; MBA, Northwestern University; CPA*

Jacqueline joined BASi as a VP of Finance and CFO in 2012 and was appointed as the company's CEO and President in 2013.

Commercial experience:
Prior to BASi, she was a VP of Finance at Remy, a heavy-duty equipment manufacturer, where she was responsible for strategic planning and financial control. Earlier, as a CFO of mergers and acquisitions at Dupont, she led due diligence for the acquisition of ICI Polyester, and the divestiture of DuPont Pharmaceuticals to Bristol Myers Squibb. Pharmacia Corporate Special Recognition Award & Quality Control Achievement Award in 1993.

Charles Spainhour

Calvert Labs, CSO

Background: *Drug discovery*

Key traits: *Large CRO experience, big pharma, drug discovery expertise*

Education: *VMD Veterinary, University of Pennsylvania; PhD Toxicology, Texas A&M University; BS, Biochemistry*

Charles is Chief Scientific Officer of Calvert Laboratories, a subsidiary of Calvert Holdings. He leads scientific operations of the company's Northeastern PA preclinical laboratory. His areas of expertise include the fields of pharmacokinetics & metabolism, biochemical pharmacology, and process chemistry.

Academic experience:
No. of publications: 9

CRO industry experience:
Prior to joining Calvert Laboratories, Charles held multiple leadership roles in biomedical research at Pharmakon Research International, Phoenix International life sciences (MDS), and Smith, Kline & French Laboratories (GSK).

Michael Recny

Calvert Labs, CEO

Background: *Commercial*

Key traits: *Biotech experience, strategic acumen*

Education: *BS Biochemistry, University of Rochester; PhD Biochemistry, University of Illinois, Urbana-Champaign; Post-doctorate appointments at the Dana Farber Cancer Institute in Boston and at Harvard Medical School*

Michael is CEO at Calvert Laboratories and Calvert Holdings. He also serves as President of Calvert Research. He is responsible for building and managing the portfolio of corporate risk-sharing partnerships for Calvert Research and structures all partnership transactions.

Academic experience:
No. of publications: 44

Biotech experience:
Prior to Calvert, Michael served as Vice President of Corporate Development at Trimeris (acquired by Synageva BioPharma), a venture-backed, publicly traded biotech company, engaged in the development of a class of antiviral drug treatments. He was responsible for establishing strategic partnerships and business alliances, as well as for managing public relations with investors and analysts. Earlier, he was Director of Protein Biochemistry at Prospect, a Cambridge (MA) based biotech. He also worked as a staff scientist and laboratory head at the Genetics Institute (acquired by Pfizer).

Yining Qi

Crown Bioscience, SVP of Operations

Background: *Operations*

Key traits: *Large CRO experience, big pharma experience, scientific operations*

Education: *MBA, Rutgers; MD Shanxi Medical University, MPH Shanxi Medical University*

Yining joined Crown Bioscience as SVP of Operations in 2010. He oversees the Taicang facility operations and leads process improvement projects.

CRO lindustry experience:
Yining was Executive Director of Preclinical Operations at WuXi, where he was responsible for technical operations, client services and project management. He led preclinical study planning and the implementation of electronic data capture project.

Big pharma experience:
Prior to WuXi, Yining worked at Merck as a research fellow and later as a group leader of technical operation of safety assessment division. He was responsible for multiple process improvement projects involving data system validation. He also he a position as a project manager at Becton Dickinson, United States.

Jean-Pierre Wery

Crown Bioscience, President

Background: *Academic/ research*

Key traits: *Big pharma experience, biotech experience, therapeutic area expertise*

Education: *PhD and BS in Physics, University of Liege; post-doctorate fellowship at Purdue University*

Jean-Pierre joined Crown Bioscience in 2008, as the company's President. He has developed translational platform for the oncology and metabolic disease fields. This platform impacts efficiency of the drug discovery and development process.

Academic experience:
No. of publications: 50

CRO experience:
Jean-Pierre was CSO at Monarch LifeSciences, a CRO specialising in protein biomarker discovery, development and validation services.

Biotech experience:
Jean-Pierre served as a VP of Computational Drug Discovery, at Vitae Pharmaceuticals, a pharmaceutical start-up focused on autoimmune diseases. His responsibilities included developing the company's proprietary drug design technology.

Big pharma experience:
During his 12 year career at Eli Lilly, Jean-Pierre served in multiple scientific and managerial positions. His responsibilities included leading projects in structural biology and computational chemistry and developing novel methodologies for protein structure determination.

Alex Wu

Crown Bioscience, CEO

Background: *Finance/ corporate development*

Key traits: *Founder, financial acumen, strategic acumen*

Education: *BS from Fudan University; PhD in Molecular and Cell Biology and MBA from the University of California, Berkeley; Post-doctoral research at Stanford University*

Alex co-founded Crown Bioscience in 2006. The company has raised over $55million from a number of life sciences venture funds, such as OrbiMed and Lilly Asia Ventures. Alex heads Crown's growth through a focus on oncology and diabetes therapeutic areas, serving pharma and biotech sectors. Alex has been an Independent Director of CASI Pharmaceuticals, an oncology-focused biopharmaceutical company, since 2013.

Academic experience:
No. of publications: 8

Biotech experience:
Alex was previously CBO of Beijing-based Starvax International, a biotech focused on oncology and infectious diseases. Earlier, he was co-founder and COO of Unimicro Technologies, a medical supply company.

Pharma experience:
In Alex's earlier career he was Manager of Business Development and Strategic Planning at Hoffmann-La Roche.

Commercial experience:
Alex served as Head of Asian Operations at Burrill & Company.

Cord Dohrmann

Evotec, CSO

Background: *Academic/ research*

Key traits: *Operational experience, small biotech experience, metabolic disease expertise*

Education: *PhD Cell/ Cellular & Molecular Biology, Harvard Medical School; MA in Molecular Biology, Max-Planck-Institute, DAAD Scholar, Duke University*

Cord has been acting as CSO and member of the management board of Evotec since 2010. He leads the company's two core businesses: EVT Execute, a CRO service, and EVT Innovate, an in-house work on Evotec's proprietary pipeline.

Academic experience:
No. of publications: 16

Research fellow at the Massachusetts General Hospital, Boston. Currently advising Max-Planck Institute.

Patents: 8

Biotech experience:
Cord joined DeveloGen in 1999 as a VP of Research. He served in numerous executive positions of increasing responsibility, including CEO. During his tenure, Cord led the growth of DeveloGen from a start-up to a fully-fledged biotech company with a pipeline focused on metabolic diseases such as diabetes and related disorders.

Mario Polywka

Evotec, COO

Background: *Academic/ research*

Key traits: *Scientific leadership, board experience, founder*

Education: *Post doctorate fellowship with focus on biosynthesis of penicillin and PhD in Organic Chemistry, University of Oxford*

Mario joined Evotec in 2006 as the company's CSO, following the merger with his previous company - Oxford Asymmetry International. He leads Evotec's global technical and business development operations in the drug discovery area.

Academic experience:
No. of publications: 17

Multiple college teaching positions at Oxford University (1996-1999) Fellow of the Royal Society of Chemistry.

Patents: 10

CRO Industry experience:
Prior to joining Evotec, Mario had served as the CEO and the COO of Oxford Asymmetry International, which he joined in 1997 as a founding chemist. Oxford Asymmetry International is one of Oxford University's most successful spin-outs.

Biotech experience:
Mario has been serving as the non-executive director of Pharminox, a Nottingham-based, oncology-focused biotech, since 2006. He also ran multiple Oxford University and Southampton University spin-out companies between 2002 and 2004.

Werner Lanthaler

Evotec, CEO

Background: *Corporate development*

Key traits: *Financial acumen, biotech experience, strategic acumen*

Education: *PhD in Economics, University of Vienna; MA Harvard*

Werner was appointed Chief Executive Officer of Evotec in 2009. He is leading Evotec's business and corporate development initiatives. In 2014, Werner was appointed a member of the supervisory board of arGEN-X, a clinical-stage biotech focused on oncology.

Academic Experience:
No. of publications: 2

Biotech experience:
Prior to Evotec, Werner served as Chief Financial Officer at Intercell (now Valneva), a Vienna-based biotech company, focused on the development of prophylactic and therapeutic vaccines against infectious diseases.

Commercial experience:
Earlier, Werner served as Director of the Federation of Austrian Industry, and as Senior Management Consultant at McKinsey & Company.

John Lin

Frontage Laboratories, SVP Bioanalytical and Biologics Services

Background: *Academic/drug discovery*

Key traits: *Big pharma experience, scientific leadership, DMPK expertise*

Education: *PhD in Analytical Chemistry, Dalhousie University; MS in Analytical Chemistry Yunnan University; post-doctoral research fellowship in pharmacokinetics and metabolism, College of Pharmacy and the Comprehensive Cancer Center of the Ohio State University*

As Senior VP, Bioanalytical and Biologics Services, John leads operations for the company's global bioanalytical labs. His current research focuses in the area of bioanalytical method development and validation, dry blood spot (DBS) sampling with LC-MS/MS analysis, and biomarker quantification using LC-MS/MS.

Academic experience:
No. of publications: 20

Reviewer for several international journals, including the Journal of Pharmaceutical Biomedical Analysis (JPBA) and Journal of Chromatography B (JCB).

Patents: 1

Big pharma experience:
Prior to Frontage, he led the global drug metabolism and pharmacokinetics (DMPK) division at AstraZeneca. His research was focused on development and validation of LC-MS/MS methods for the determination of small and large molecules in biological matrices.

CRO industry experience:
John was a Laboratory Director for Avantix Laboratories, a full service CRO, and a pharmacokinetic and biopharmaceutic interpretation consulting firm.

Song Li

Frontage Labs, CEO

Background: *Drug discovery*

Key traits: *Scientific expertise, pharma experience, founder*

Education: *PhD Analytical Chemistry, McGill University; BSc Chemistry, Zhengzhou University*

Dr Song Li founded Frontage Laboratories in 2001. He has been serving as the company's CEO since then. Frontage has offices and research facilities in both the United States and China.

Academic experience:
No. of publications: 15

Pharma experience:
Prior to founding Frontage, he held multiple executive roles at Great Valley Pharmaceuticals and Wyeth, during which, as a section head, he was responsible for numerous projects related to the development of pharmaceutical products.

Honours & awards:
"Realizing the American Dream" award from the Pennsylvania Welcoming Society.

Outstanding 50 Asian Americans in Business Award from the AABDC.

Xuehai Tan

HD Biosciences, CEO

Background: *Academic/ Research*

Key traits: *Big Pharma Experience, CRO Experience, Founder*

Education: *BS, Wuhan University; PhD in Biochemistry and Molecular Biology, University of Ohio; post doctoral fellowship at University of Washington*

Xuehai is a founder, CEO and President of Shanghai-based HD Biosciences (HDB). After a successful career in the pharmaceutical industry in the United States, Xuehai identified an opportunity to build his own business, and returned to his native country to found HDB. The company was backed by Pfizer Venture Investments, Lilly Asia Ventures, and Morningside Group.

Academic experience:
No. of publications: 7

Research Assistant Professor in the Biochemistry Department, University of Washington

Associate Director & the Head of Drug Discovery of Beijing HuaDa Genome Center, China

Patents: 18

CRO industry experience:
Xuehai worked at Aurora Biosciences (acquired by Vertex), one of the leading drug screening companies at the time, as a senior scientist and project leader.

Big pharma experience:
His previous experience in the pharmaceutical industry included a position of a research scientist at Baxter Biotech. Earlier, he served at Johnson & Johnson Pharmaceutical Research Institute as a senior scientist in the assay development group.

Peiyuan Lin

HD Biosciences, SVP Discovery Biology

Background: *Academic/ research*

Key traits: *Big pharma experience, multiple therapeutic area expertise*

Education: *BS Biochemistry Sun Yat-Sen University; PhD in Biochemistry and Cellular Biology, University of Cincinnati; post-doctoral fellowship at Hoffmann-La Roche and P&G*

Peiyuan was appointed as SVP of Discovery Biology in 2008. She joined HD Biosciences following 16 years of service at GSK.

Academic experience:
No. of publications: 20

Big pharma experience:
Prior to joining HD Biosciences, Peiyuan held multiple roles of an increasing responsibility at GSK, the most recent of which was Senior Investigator in Molecular Pharmacology at GSK Research Triangle Park. She had been with GSK (including former Burroughs Wellcome and Glaxo Wellcome) for over 16 years, starting as a research scientist and advancing into senior leadership roles. She led key internal research projects in multiple therapeutic areas such as respiratory and inflammation areas. Moreover, she has been working in the metabolic disease discovery research since 2003.

Yansheng Liu

KCAS, Senior Director, R&D and LC-MS/MS Services

Background: *Academic*

Key traits: *Small CRO experience, scientific management*

Education: *PhD fellowship in Analytical Chemistry, Indiana University*

As Senior Director R&D, Yansheng is managing the Bioanalytical and LC-MS/MS laboratories. He joined KCAS in 1997. His research is focused on bioanalytical methods with his group using LC-MS/MS combined with online and offline sample cleanup techniques.

Academic experience:
No. of publications: 40

CRO experience:
Since completing his post-doctoral research and joining KCAS in 1997, Yansheng has developed hundreds of bioanalytical methods with his group, as well as leading the operations group to subsequently validate those methods. Furthermore, after having developed and validated those methods, he has continued to monitor and troubleshoot any problems that arise from them, ensuring quality and timeline management. He has authored more than 40 publications and presentations.

Terry Osborn

KCAS, CEO

Background: *Commercial*

Key traits: *Entrepreneur; big pharma experience*

Education: *PhD in Biochemistry, BS Chemistry University of California; MBA, Pepperdine University*

Terry has been a board member for KCAS since 2009 as part of Heartland BioVentures, a Kansas Bioscience Authority's business-assistance program. He was appointed as the company's CEO in 2011.

Academic experience:
No. of publications: 5

Commercial experience:
Prior to KCAS, Terry founded and was acting CEO of AbaStar MDx, a CNS-focused molecular diagnostic company. Formerly, he served as COO at WaferGen Bio-systems, genomic analysis systems manufacturer, where he was in charge of strategic direction and led the IPO. Earlier, as a CEO of a molecular diagnostics startup, Gene Express, he led commercialisation and growth activities.

Big pharma experience:
He was Director of Marketing at IVAC, (Eli Lilly), overseeing disposables and medical instruments businesses.

Mei-Shu Shih

PharmaLegacy Laboratories, CSO

Background: *Research*

Key traits: *Multiple therapeutic area expertise, large cro experience, founder*

Education: *PhD in Veterinary Pathology, Colorado State University*

Mei-Shu co-founded PharmaLegacy in 2008. He is the company's CSO, Chief Veterinary Pathologist and Head of QA. His multiple therapeutic areas expertise includes orthopaedics, oncology, immunology and tissue engineering.

Academic experience:
No. of publications: 11

CRO industry experience:
Prior to founding PharmaLegacy, Mei-Shu was at MDS Pharma as Director of Orthopaedics and Tissue Engineering. During his tenure at MDS Pharma, he led scientific teams and managed business development activities of the department.

Jeff Duan

PharmaLegacy Laboratories, General Manager

Background: *Research*

Key traits: *Large CRO experience, biotech experience, clinical background*

Education: *MD, Tianjin Medical University*

Jeff has been General Manager of PharmaLegacy since 2008. He is a board certified MD in the United States and currently sits on the Board of the Shanghai Experimental Animal Committee.

CRO industry experience:
Prior to PharmaLegacy, Jeff was at Hutchison Medipharma as Group Director of Pharmacology, where he led the company's preclinical animal efficacy and safety evaluations.

Biotech experience:
Prior to Hutchison, he was at Syntha Pharmaceuticals, oncology and auto-immune disease focused biotech company, in both scientific and managerial roles, including Assistant Director of Pharmacology.

Kristen Nikula

Seventh Wave Laboratories, CSO

Background: *Academic/ research*

Key traits: *Scientific leadership, big pharma experience, therapeutic expertise*

Education: *PhD in Comparative Pathology, University of California, Davis*

Kristen is the Executive VP, CSO and Senior Director of Toxicology and Pathology at Seventh Wave Laboratories. She joined the company in 2006. Her scientific expertise includes nonclinical toxicology and pathology, exploratory toxicology, respiratory and cardiovascular system pathology.

Academic experience:
No. of publications: 100

American College of Veterinary Pathologists, Diplomat

Society of Toxicologic Pathologists, Full member

Society of Toxicology, Full member

Lovelace Respiratory Research Institute Director, Biopersistent Particle Center (1988-2000)

Assistant Professor, University of Colorado

Big pharma experience:
Prior to her current role at Seventh Wave, Kristen served as Senior Director, Pathology and *In Vivo* toxicology at Pfizer. Earlier, she worked as a toxicologist, toxicological pathologist, in Pfizer and Pharmacia.

Kim Sagartz

Seventh Wave Laboratories, COO

Key traits: *Small CRO experience*

Education: *BA, University of Missouri St Louis*

Kim is the President and COO of Seventh Wave Laboratories. She has been with the company since its founding in 2003.

John Sagartz

Seventh Wave Laboratories, CEO

Background: *Research*

Key traits: *Founder, big pharma experience, drug development*

Education: *PhD in Experimental Pathology, Ohio State University; BS, DVM, Animal Science, Veterinary Medicine, Kansas State University*

John founded Seventh Wave Laboratories LLC in 2003. He is the company's CEO and President. The company has recently purchased new space for its office and laboratories, three times the size of its current location, to accommodate the growth pace.

Academic experience:
No. of publications: 22

Board certified veterinary pathologist and toxicologist

Pharma experience:
Prior to founding Seventh Wave Laboratories, John was Senior Director Preclinical Development at Pharmacia (Pfizer). He began his career at Searle (Pfizer), where he founded a preclinical development department integrating various scientific disciplines, including toxicology, pathology, ADME-PK and pharmaceutics.

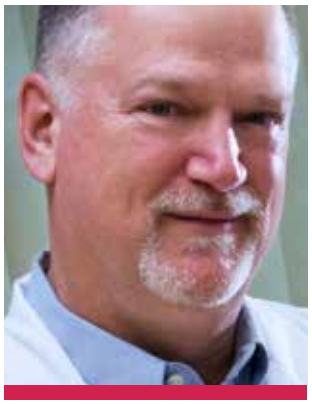
Mark Cunningham

Surpass, CSO

Background: *Academic/ research*

Key traits: *Large CRO experience, biotech experience, scientific expertise*

Education: *PhD in Pharmaceutical Sciences, University of Kentucky; Post-doctorate in cardiovascular pharmacology, University of Michigan Medical School*



Mark has been CSO of Surpass since April 2014. He joined the company's R&D team in 2006 as a scientific director. His scientific areas of expertise are physiology, pharmacology and pathobiology of cardiovascular disease with a focus on preclinical models of inflammation, cardiovascular disease and safety pharmacology.

Academic experience:
No. of publications: 50

CRO industry experience:
Prior to joining Surpass, Mark served as the Scientific Director for Charles River Laboratories Interventional and Surgical Services. Prior to Charles River, he was a Director of Pharmacology and Surgery at Sierra Biomedical as the Director of Pharmacology and Surgery.

Biotech experience:
Mark has served as a senior scientist in pharmacology and toxicology at Centocor (Janssen Biotech), and as group leader of pharmacology at Selective Genetics.

Tim Pelura

Surpass, CEO

Background: *Commercial*

Key traits: *Founder, biotech experience, drug development*

Education: *PhD Chemistry, MS in Chemistry, BS in Biology, Rutgers University*

Tim was appointed as the CEO and President of Surpass in 2013.

Academic experience:
No. of publications: 15

Commercial experience:
Prior to Surpass, Tim was President of BioEntrep, a strategic consultancy firm focused on life science communications in the areas of finance, business, corporate and preclinical development, clinical/regulatory strategy and corporate communications.

Biotech experience:
Previous positions include Chairman, President and CEO of Immunome, an antibody platform company and CEO of Promedior, a biotech developing therapeutics for the treatment of fibrotic diseases. He also served as CSO of Kereos, leading all R&D activities for their oncology, cardiology, and molecular imaging programs. Additionally, he was President and COO of Provasis Therapeutics, a developer of interventional neurosurgical devices.

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