



Technology Partnerships

Julie Frearson, Ph.D.
Corporate Vice President, Strategic Alliances

Strategic Partnership Portfolio - May 2021

A diverse group of partnerships providing cutting-edge technologies & capabilities to the CRL portfolio

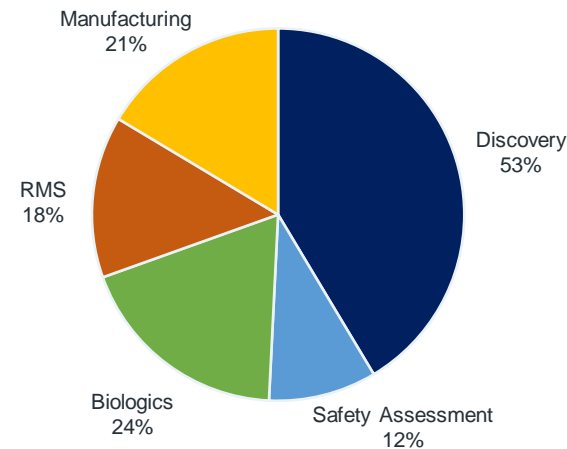
Three-year strategy has matured, resulting in a portfolio of 12 business-enhancing partnerships and its first acquisition (Distributed Bio)

\$40M+ investment in signed partnerships to date
\$40M+ investment opportunity in current pipeline

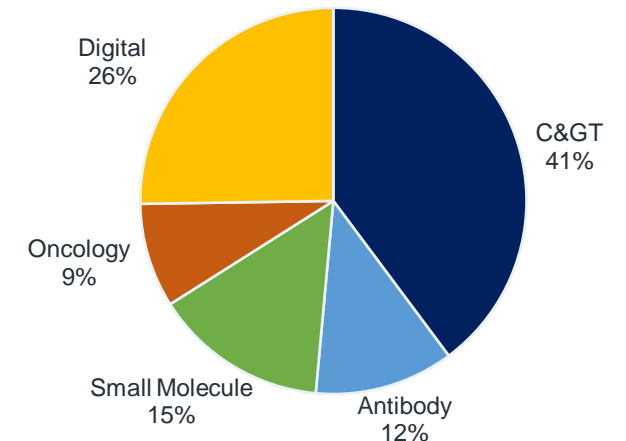
9 companies with acquisition opportunities in high-growth market sectors

Anticipate a steady state portfolio: 15-20 active partners representing all business units with concentration in Discovery and key strategic themes: C> and Digital













**Partnership Distribution
(incl. Pipeline) by CRL Business**



**Partnership Distribution
(incl. Pipeline) by Scientific Area**



Strategic Partnership Summary

| | Partner | Scientific Expertise | CRL Business Unit |
|---|---|---|-------------------------------|
|  | PathoQuest (April 2018) | Next-gen sequencing | Biologics Testing Solutions |
|  | Distributed Bio October 2018 (acquired Dec. 2020) | Large molecule discovery platform; Antibody libraries | Discovery |
|  | Atomwise January 2019 | Artificial intelligence (AI) for Discovery | Discovery |
|  | Novatek April 2019 | Laboratory information mgmt. systems (LIMS) | Microbial Solutions |
|  | Resero Analytics May 2019 | SEND compliance software | Safety Assessment |
|  | Bit Bio December 2019 | Translation discovery platform for stem cells/iPSCs | Discovery |
|  | Fios Genomics January 2020 | Bioinformatics | Discovery & Safety Assessment |
|  | Deciphex March 2020 | Preclinical digital pathology | Discovery & Safety Assessment |
|  | JADE Biomedical January 2021 | Biologics testing in China | Biologics Testing Solutions |
|  | Cypre January 2021 | 3D tumor modeling platform; immuno-oncology assays | Discovery |
|  | Kibur Medical February 2021 | Implantable microdevice (IMD) for oncology | Discovery & Safety Assessment |
|  | Valence Discovery April 2021 | Artificial intelligence (AI) for Discovery | Discovery |

Science Trends Driving Market Actions

Partnerships are helping Charles River evolve to meet the changing needs of our clients

Company logo denotes active partnership
Italicized text denotes future target partnership

Market Driver

CRL Strategic Imperative

Partnership Portfolios

BROAD THERAPEUTIC OPTIONS

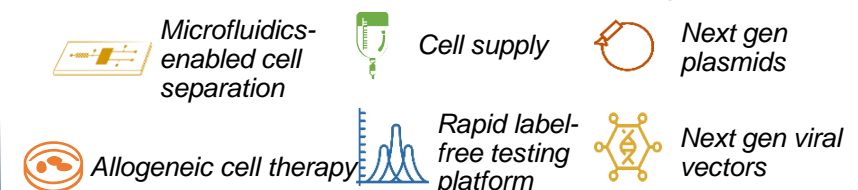
Clients are drugging disease using small molecules, antibodies, genes, cells, and combinations thereof



Accelerate the portfolio for advanced modalities across Discovery, Safety, and Manufacturing



Advanced Modalities: Cell and Gene Therapy



HUMAN TRANSLATION & DATA RICHNESS

Clients need to understand how drugs will behave in human systems as early as possible and tackle the best human targets, not the easiest



Enhance “human-ness” of our assays and adopt next generation bio-analytics to unlock difficult targets and improve decision making



Next-gen biology



DIGITALIZATION OF SCIENCE

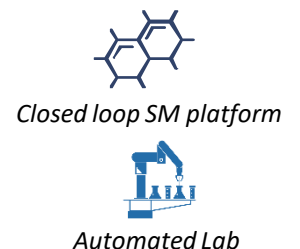
Clients are increasingly using data and AI/ML to drive decisions and increase clock speed of discovery and development



Digitally transform CRL core portfolio to drive efficiencies, competitive differentiation, and reach patients sooner



Digital, AI, and Informatics



Advanced Modalities

Cell & gene therapy plays across the continuum of services

1

Designing advanced modalities

Antibody fragments (scFv) are optimal building blocks, enabling the design and engineering of advanced biologic modalities: multi-specifics, bioconjugates, and cell therapies including CAR-T and CAR-NK

Example:



Nearly one-third of all DBio discovery programs are for cell or gene therapies

2

Donor cell materials for cell therapy

Using microfluidics to standardize the processing of donor cell materials, facilitating greater quality and supply chain consistency

Example:



Microfluidics-enabled cell separation

3

Analytical testing of cell and gene therapies across the globe

By combining our expertise with partners' localized knowledge to offer GMP and GLP services, we affirm our commitment as a global partner in advanced modalities

Example:



Construction of new lab facilities in Suzhou is underway; target to be operational in Q3 2021

Next Generation Biology

Increasingly sophisticated models coupled with more challenging biology

1

Improved translational models

Directed differentiation of iPSC-derived cells that reproduce human physiology at scale and bio-printed 3D tumor models incorporating human tumor, immune, and stroma cells to reproduce the tumor micro-environment

Examples:   C Y P R E



Bit Bio awarded Biotech of the Year,
Cambridge UK 2021

2

Advanced model systems and readouts

In depth readouts – biomarkers, transcriptomics, metabolomics, immune profiling – allowing in depth characterization and generating large data sets from single experiments

Examples:  C Y P R E  KIBUR MEDICAL



Clients need to maximize data
intensity from precious
samples and animal models

3

Unlocking difficult targets: CryoEM

Enables structure-based design for large protein complexes and membrane proteins that are intransigent to X-ray crystallography

Examples:  CryoEM



Recent evidence of being able to visualize individual atoms in a target protein: 1.2A resolution. Cryo-EM structures will outnumber X-ray crystallography by 2024

Digital, AI, & Informatics

Better use of data to drive speed and efficiencies into our workflows

1

Informatics enables better-informed decision-making

In-depth analysis and biological interpretation of multi-dimensional data sets supports identification of novel therapeutic targets, biomarkers, new indications for known drugs, and informs translational research

Example:



Interest in genomics of COVID-19 variants has helped Fios grow sales by 60% and headcount by 30%; Fios will move to a larger facility in late 2021

2

Transforming the speed and efficiency of preclinical pathology

Maximize efficiency with digital workflows, AI-powered tools and automated processes that expedite delivery of actionable data into the hands of scientific experts

Example:



Industry's first end-to-end fully digital pathology assessment of a GLP-compliant study completed with big pharma client, more early adopters of digital workflow on the horizon

3

AI enhances innovation and streamlines small molecule drug discovery

Explore novel areas of chemical space, and optimize multiple parameters simultaneously to reduce the number of design cycles necessary to reach target product profile

Examples:



A new drug candidate created using an AI-platform began clinical study after just 12 months of preclinical research (avg is 4.5 years)

Strategic Partnership Takeaways

Risk-mitigated approach to enhance client access to new technologies for drug discovery, development, and manufacturing

1

Driving strategy and growth

We expect the partnership strategy to provide a differentiated, high growth and market-tested set of acquisition targets over next 3-5 years

2

Innovation for better program efficiency and speed to clinic

Partnerships enable CRL clients to leverage cutting-edge technologies with the assurance that the technologies and companies have been vetted by CRL

3

Underpinning Key Strategy Areas

Partnerships will support all business units with special emphasis on the key strategic themes of digital and AI/machine learning plus cell and gene therapy discovery, development, and manufacturing