

I. Client's Objective

A European tech-transfer agency needed help characterizing the commercial potential of a novel pre-clinical biomarker and corresponding screening tests for colorectal cancer

II. Lumleian's Perspective

- In order to position the client's biomarker for success in the CRC investor market, Lumleian proposed a multi-phased diligence effort:
 - Pressure test the clinical and scientific rationale
 - Benchmark contemporary clinical trial plans and regulatory precedents
 - Assess the market opportunity, clinical feasibility, and probability of regulatory success of several potential development plans
 - Model the resulting commercial revenues of each explored potential development plan

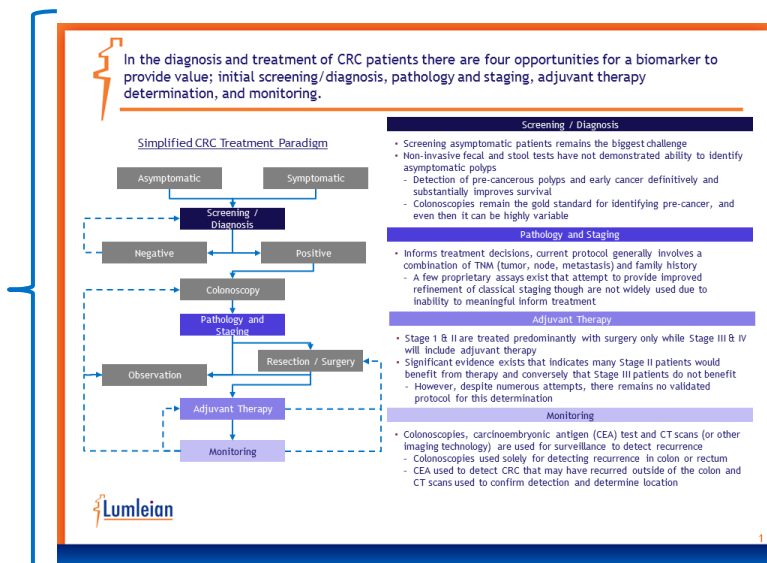
III. Client Result

- **Solid Investment Thesis:** Based on Lumleian's written report and pitching slide deck, the client was able to actively approach potential investors with clear, objective plans and valuations
- **Proven Development Strategy:** Through in-depth qualitative and quantitative analyses of potential development options, client was able to confidently decide on a development strategy with a high probability of success

IV. Engagement Summary

CRC Treatment Paradigm

- Using both primary and secondary research, Lumleian mapped the CRC treatment paradigm, existing therapies, and points of current unmet need
- Our team identified four different stages within the paradigm that the client's technology has potential to provide value, leading to four potential development plans



IV. Engagement Summary

Target Opportunity Assessment of Identified Development Options

- Insights gleaned from interviews and secondary research provided a clear understanding of the commercial potential; several critical metrics were evaluated:
 - Degree of Unmet Need
 - Market Opportunity
 - Clinical/Regulatory Feasibility

A non-invasive screening test that can identify pre-cancerous polyps as well as cancer is a significant need for improving patient outcomes.

Screening / diagnosis of asymptomatic at risk patients

Rationale

- Market Opportunity**
 - Between the US and EU, >200M patients are recommended for screening (age 50 or older)
 - The undeniable benefit for early detection on patient outcomes and the increasing age of the general population will only increase the number of patients submitting to screening
- Degree of Unmet Need**
 - 65% and 31% in the US and EU respectively are considered current for screening
 - Many US and EU patients elect to avoid colonoscopies and undergo less sensitive non-invasive tests, ~10M a year in the US
 - Current non-invasive tests have a number of limitations: not sensitive for detecting pre-cancer, require handling of feces, and often performed in the physicians office where data indicates <10% sensitivity
- Clinical / Regulatory Feasibility**
 - Numerous past and current attempts to identify biomarkers have not produced results
 - The key need for identifying pre-cancerous polyps represents the significant hurdle
 - Serial testing using fecal tests can improve sensitivity greatly and approaches colonoscopy, however due to patients substantial lack of follow through, current guidelines dismiss this as unlikely
- Overall**
 - Enormous market opportunity both in terms of the number of tests and clinical need, as evidenced by the numerous companies attempting to develop a better screening tool
 - Exact Sciences currently market value of ~\$700M is based almost solely on its expectations for Cologuard
 - A blood-based test has advantage over other tests in terms of patient compliance and willingness

Lumleian Sources: Olobocan 2008; American Cancer Society Colorectal Facts & Figures 2011-2013

Relative Ranking:

Benchmarking Against the Competition

- Specificity and sensitivity attributes of the company's technology, visually represented relative to the competition, identified potential opportunities and the preferred profile for client's technology

The currently available tests leave significant room for improvement in pre-cancer sensitivity, new close to market tests potentially raise the bar only slightly; A substantial opportunity still exists for a blood-based non-invasive test with compelling sensitivity.

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* Approved in EU, in regulatory trial in US
* Not approved, in regulatory trials assumed efficacy

Forecasting of Commercial Opportunity

- Lumleian's data analysis provided estimated market share possibilities in the US and EU for each biomarker development strategy in 2025
- 10-year forecasting of the technology under multiple risk scenarios provided client with quantitative basis for their own and potential investor's decision making

The substantial differences in potential number of tests highlights the development challenge of using the same test for two different applications; a differentiated predictive test could warrant premium pricing and significantly increase the commercial opportunity; The scenario analysis provides insights into the revenue sensitivity to different market share of total screening market

Number of Tests in US and EU by Biomarker Type in 2025

US and EU27 Revenue Forecast, by Scenario (2016-2025)

SMM	2017	2018	2019	2020	2021	2022	2023	2024	2025
Low	\$8	\$28	\$57	\$96	\$148	\$207	\$230	\$233	\$235
Middle	\$8	\$32	\$72	\$133	\$221	\$331	\$369	\$372	\$376
High	\$8	\$39	\$98	\$197	\$346	\$544	\$606	\$612	\$619

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