

# Patent Searches for Early Stage Biopharmaceutical Companies

Case Study of Pharmaceuticals Targeting Galectin-3

CEPIUG 10<sup>th</sup> Year Anniversary Conference  
Sunday 9<sup>th</sup> September, Milan

Pieter Muntendam, MD, President and CEO of G3 Pharmaceuticals  
Bob Stembridge, Senior IP Analyst, Clarivate Analytics



## AGENDA

G3 Pharmaceuticals	01
The Problem	02
The Solution	03
The Process	04
The Deliverable	05
Learnings for the start-up life sciences community	06

# ABOUT G3 PHARMACEUTICALS



## WHO WE ARE

- Industry: Biopharmaceutical company
- Location: Boston, MA, USA
- Business model: Pursuing the development of novel pharmaceutical galectin-3 inhibitors



## WHAT IS GALECTIN-3?

- An important regulating protein that promotes the formation of fibrosis in many organ systems, including heart, lung, liver and kidney
- Studies from around the world across species and disease models have validated galectin-3 as an important drug target
- Has a built-in “on-off switch” that is controlled by special carbohydrates
- Galectin-3 inhibition holds the potential for transformative disease-modifying therapeutics for multiple conditions

## THE PROBLEM

- The galectin-3 related patent landscape includes numerous and very diverse filings and issued patents
- Venture capital provides the lifeblood for the life sciences industry. Material IP protection on the innovative product is usually a sine qua non for access to the required capital
- IP due diligence by the lead investor(s) is time-consuming and costly (often \$100k or more)
  - Surprises during IP due diligence, whether material or not, can undermine the prospective investor's confidence in the management
  - IP due diligence typically results in a confidential report to the prospective investor not available to the company
  - The cycle repeats itself with every series of financing



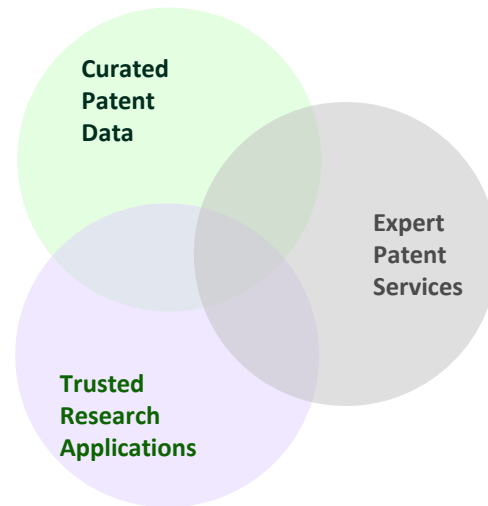
## A BETTER PROCESS

- G3 Pharmaceuticals decided to engage the Derwent Patent Analytics team at Clarivate to conduct a comprehensive review of the relevant IP landscape with the following objectives:
  - Investment Related
    - Provide a thorough analysis of the IP landscape as a starting point for due diligence
    - Minimize risk of due diligence surprise findings
    - Enhance investor confidence
  - Identify Additional IP Opportunities
    - The analysis of a rich IP landscape helps understand how the company fits in
    - Learnings from patents and applications often provides insights into what constitutes patentable matter in the space and how the new technology/science differs
- Starting investor IP Diligence with a Clarivate Analytics Landscape IP Report changes the dynamics and process of IP diligence

# WHY DERWENT?

Derwent has been the world's most trusted name in patent information for more than 50 years

Derwent connects exclusive curated patent data, authoritative research applications and expert patent services to support the commercial success of the world's most innovative businesses



We support the evolution of **IP markets worldwide** with authoritative patent research solutions and over 50 years of Derwent expertise



We reduce the cost of **securing and monetizing patents** through an integrated IP product and services ecosystem powered by DWPI



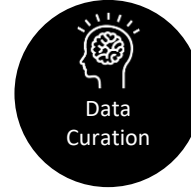
We empower **better commercial outcomes** with trusted patent solutions that make technical and market insights accessible to business

**Derwent**

*Powering IP Innovation*

 **Clarivate**  
Analytics

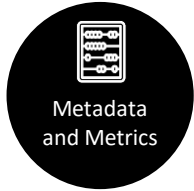
# THE PROCESS



Based on client interview, data collection is built from DWPI/Full text using tailored search strategies

Data reviewed for relevance and ownership/applicant information cleaned

Data organized using project-specific taxonomy developed in consultation with the client



Enhancement with derived data such as breadth of filing, citation frequency, technical breadth

Statistical analysis performed to identify trends and perform benchmarking

Insights from analysis are visualized using charts, graphs and tables to provide actionable intelligence



Direct access to enhanced curated data can be provided for further exploration

# THE DELIVERABLE



## IP Landscape - Galectin-3 Inhibition Therapy

Prepared for: G3 Pharmaceuticals

### Contents

<b>Key findings</b> .....	<b>3</b>
<i>Patents</i> .....	3
Overview .....	3
Entity Analysis .....	3
Technology Analysis .....	4
<i>Cortellis</i> .....	4
<b>Next steps</b> .....	<b>4</b>
<b>Project objective</b> .....	<b>5</b>
<b>Patents</b> .....	<b>5</b>
<i>Summary of patent landscape</i> .....	5
<i>Part 1: Overview of collection</i> .....	6
<i>Part 2: Patent entity analysis</i> .....	10
<i>Part 3: Technical analysis</i> .....	25
<i>Part 4: High scoring inventions</i> .....	41
<b>Cortellis</b> .....	<b>45</b>
<i>Summary of Cortellis</i> .....	45
<b>Appendix 1: Examination of collection quality</b> .....	<b>48</b>
<b>Appendix 2: Patent data collection</b> .....	<b>50</b>

## Key findings

### Patents

#### Overview

- A worldwide collection of 224 invention families in the technical area of Galectin-3 inhibition therapy was analyzed.
- Globally, innovation increases from an average of ~8 filings/year in the 1998 to 2010 timeframe to an average of ~19 filings/year from 2011 to 2016.
- The North America region dominates inventive activity at 67% total volume; European and Asia Pacific regions trail behind at 17% and 13% respectively.
- North America priority filings are dominated by United States-based entities who hold 66% of the collection. The European activity is largely represented by the EPO (7%) followed by Sweden (5%). Asia Pacific is largely represented by entities in China (6%), and Japan (5%).
- Timeline of activity reveals that United States (148 inventions) strongly outpaces other patent authorities in innovative activity in most years and is clearly driving the recent growth in this field. France is a recent entrant with all 5 of its inventions filed since 2011.
- PCT process accounts for 19% of the total family member filings making it the favored route for family expansions. 17% of family member filings are in the United States, followed by .....

# TECHNOLOGY MAPPING



Collection of 224 DWPI patent families or “inventions” filed from 1996 to present in the technical area of Galectin-3 inhibition

# TREND ANALYSIS

Source of innovation	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	Total inventions	% Recency (inventions filed since 2011)
United States				12	1	13	1	9	4	5	2	5	3	5	5	15	15	11	18	16	8		148	56.1%
EPO							1	2	1		1	1		1			2		2	4			15	53.3%
China											4	1	2				1		1	1	3		13	46.2%
Sweden					3				6				2										11	0.0%
Japan		1							1		2			3		1			1	1			10	30.0%
PCT						1	1											4			1		7	71.4%
France																4	1						5	100.0%
Korea						1						1			1						2		5	40.0%
Germany				3																			3	0.0%
Others													2	2		1	1	1					7	42.9%

Highest volume

← High recency

← Low recency

Timeline of inventive activity by patent authority

# Learnings for the start-up life science community

- The current investor-controlled IP diligence process is expensive with a low confidence/limited output not available to the company who pays the bill
- In areas with a broad and dynamic IP landscape a Derwent IP Landscape Report provides a grip on the IP landscape beyond what is possible using conventional means
- A company-driven process offers the following benefits:
  - Increased investor confidence in opportunity/company (*“company has its arms around the opportunity”*)
  - May speed up time to closing of the investment (*since IP diligence is often on the critical path to closing*)
  - Reduces risk of surprises and its adverse consequences
  - May provide insights that lead to additional IP opportunities



# Thank you



## Pieter Muntendam, MD

President and CEO,  
G3 Pharmaceuticals

[pmuntendam@g3pharma.com](mailto:pmuntendam@g3pharma.com)

[www.G3pharmaceuticals.com](http://www.G3pharmaceuticals.com)



## Bob Stembridge

Senior IP Analyst,  
Clarivate Analytics

[bob.stembridge@clarivate.com](mailto:bob.stembridge@clarivate.com)

[clarivate.com/products/patent-analytics-services/](http://clarivate.com/products/patent-analytics-services/)