TECHNOLOGY MARKETING AND TECHNOLOGY TRANSFER

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BY PRADNYA ARADHYE, RTTP

SENIOR SPECIALIST-INNOVATION MANAGEMENT

VENTURE CENTER, PUNE

OUTLINE

- TECHNOLOGY MARKETING
  - What is technology marketing?
  - Why is it important?
  - Where does it fit in the scheme of technology transfer?
  - How to go about it?

- TECHNOLOGY TRANSFER/ LICENSING
  - Basics of technology licensing
  - Types of licenses
  - Anatomy of a license agreement
  - Examples of licensing from Indian R&D institutes

WORKFLOW OF TECHNOLOGY COMMERCIALIZATION

WHAT IS TECHNOLOGY MARKETING?

- TECHNOLOGY MARKETING IS NOT LIKE MARKETING A PRODUCT AND DOING SALES…..

THEN

- WHAT IS IT?
  - It is putting right information….. in the right hands……. at the right time.

IMPORTANCE OF TECHNOLOGY MARKETING

- Technology /IP does not sell or license itself…… (even “good”a technology).
- Technology transfer without technology marketing…..Is like one hand clapping.

TWO WAYS OF TECH MARKETING

PASSIVE MARKETING

- Shot gun approach (non-targeted, mass reach)
- Put out Tech Brief on web (hoping somebody finds it)
  - Websites
  - Social media
  - Marketplaces/ portals

ACTIVE MARKETING

- Rifle firing (target oriented reach)
- Targeted tech brief outreach
  - Carefully selected contacts
  - Carefully selected companies
- Dedicated marketing campaign

Courtesy: Dr Ashley Stevens, Focus IP Group LLC

PASSIVE MARKETING

- Listing on your own assets (technology listing) website
- Listing on various available portals like: AUTM Innovation Marketplace (AIM), Flintbox etc
- Social media publicity

PORTALS

- Various portals available to list technologies:
  - AUTM Innovation marketplace
  - Flintbox
  - Tech Transfer Online
  - Own website
  - University/ Institute websites

ACTIVE MARKETING

- Selecting and reaching out to companies/ industries who would be interested after doing thorough research
  - Ask the inventor (critical inputs)
    - His/ her students
    - Any lead from the industry
- Founded on person to person contacts
- Going to conferences/ exhibitions/ trade shows
- Running dedicated campaigns for a particular technology: For e.g Technology showcases.
- IT IS ALL ABOUT NETWORKING !!

THE 3 R's OF TECH MARKETING

- THE "RIGHT" INFORMATION
- IN THE "RIGHT" HANDS
- AT THE "RIGHT" TIME

THE “RIGHT” INFORMATION

- Initially less is more: start with non-confidential discussion
- Define the innovation
  - Precisely
  - How does it work?
  - It’s benefit over other existing technologies
  - Substantiate with data
- IP and tangible property status
- Stage of development
- Marketing documents: tech briefs, video, photographs etc

THE “RIGHT” HANDS

- Obvious company/ technology fits
- Non-obvious company/ technology fits
- Initial contacts: decision makers (VP, R&D head, marketing head, open innovation)
- Conferences, trade shows
- Technology brokers
- Scanning trade journals
- Other media

THE “RIGHT” TIME

- It is really difficult to predict the “right” time for any given technology (but priority date of the patent could be the starting point for making the decision).

- Look for obvious strategic positioning of the technology
  - Entry/ forays in to new market
  - New product in the existing market
  - Expanding current product portfolio

MARKETING DOCUMENTS

- THE TECHNOLOGY BRIEF
- OTHER MARKETING COLLATERALS
  - Images/ flyers/ posters
  - Detailed report
  - Videos

Technology Spotlight

TechEx.in
Tech Transfer Hub at Venture Center
Supported by NBM - BIRAC

Deployable Toilet System: Toilets for a non-sewer system

Vishwakarma University has developed an affordable toilet system which is pathogen and odor free. The system is modular and easy to assemble on-site.

Features

- Modular, separable and easy to assemble Toilet system
- Filtration unit for recycling of waste water to flush tank
- Toilet Pot developed from Electronic Waste (e-waste) material
- Cost effective

THE TECHNOLOGY BRIEF

TechEx.in
Tech Transfer Hub at Venture Center
Supported by NBM - BIRAC

Council of Scientific and Industrial Research
National Chemical Laboratory

Technical Brief

Ref No: Tech Brief/2022/04

Anakinra Biosimilar

About Anakinra

Anakinra, sold by Swedish Orphan Biovitrum, under the brand name Kineret, is a recombinant, nonglycosylated form of the human interleukin-1 receptor antagonist (IL-1Ra), that can reduce the activity of interleukin-1, a key driver of inflammation in autoimmune and autoinflammatory diseases. It is used in rheumatoid arthritis as a second in line treatment to a Disease Modifying Anti Rheumatic Drug, in addition to treating Stills disease, Neonatal-onset multi-system inflammatory disease, and more. However, treatment costs remain high, with $ 1194 (for 4.69 ml) and $ 3811 (for 18.76ml).

Technology Offering

- Clone, upstream and downstream process for producing biosimilar Anakinra
- Soluble expression of Anakinra eliminating in-vitro refolding step
- Purification process involving novel multimodal chromatographic purification steps > 2X improvement in productivity
- Time and cost effective expression avoiding in-vitro refolding of protein
- Soluble protein expression > 1gm/L of fermentation broth

Market Potential

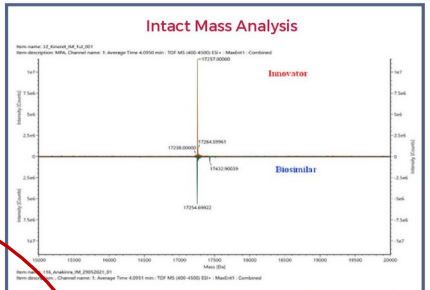
Nearly 4% of the world's population is affected by one of more than 80 different autoimmune diseases, rheumatoid arthritis being one of the most common. However, very few companies seem to be working on developing biosimilars of the molecule. The biosimilar is also currently being tested for newer indications such as COVID.

Current Technology Status

- Development of Hypotheses and Experimental Designs Done
- Non-clinical *in-vitro* studies: Physicochemical characterization for Biosimilarity Done
- Non-clinical *in-vitro* studies: Functional characterization for Biosimilarity Done

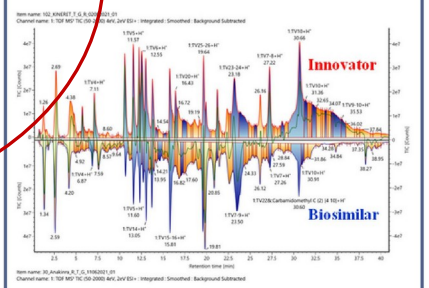
Selected Biosimilarity Data

Intact Mass Analysis



Sample	Observed mass (Da)	Expected mass (Da)	Mass error (Da)
Anakinra_NCL	17254.6712	17255.4267	-0.7555
Kineret	17256.9708	17255.4267	1.5441

Peptide Fingerprinting



For more info and biosimilarity data, please click:

Tech Pitch PPT Tech Pitch Video

MIT TLO Technology Licensing Office

Bacterial High-Yield Production of Biofuels and/or other chemicals and chemical precursors from Non-edible Plant Sources

Technology #12971

Applications

- A novel bioprocess for the production of lipid biofuels and/or other chemicals and chemical precursors
- Rhodococcus opacus bacteria, having a natural high capacity to store lipids at up to 70% dry weight, are engineered to metabolize both glucose and xylose from plants into triacylglycerides (TAGs)
- Our efficient and sustainable microbial system enables large-scale manufacturing of TAGs

Problem Addressed

While economic and environmental concerns surrounding the use of fossil fuels have led to an increased interest in alternative technologies, current processes to generate biodiesels are not sustainable or efficient. The preferred production method converts plant oil to biodiesel but unfortunately generates a food-fuel conflict in supply chains leading to higher crop prices and also large quantities of undesirable glycerol waste that are hard to dispose of without further processing.

Our invention maximizes the use of low-cost, lignocellulosic biomass found in non-edible dried plant matter and the plant biofuel waste biproduct glycerol to abundantly make TAGs that can be chemically converted into biofuel and/or other chemicals and chemical precursors. The technology offers the potential to revolutionize TAG production as a cheaper, more efficient, and higher yield process over plant-based purifications through the use of an engineered bacterial expression system.

Technology

1. This technology describes a method to obtain high cell density and TAG production using batch fermentation through optimized carbon to nitrogen (C/N) ratio, constant pH and oxygen levels.
2. This technology also allows microbial production of TAG via xylose and glycerol consumption. Plasmids allowing expression of enzymes to metabolize xylose and glycerol are constructed and introduced into *R. opacus*.
3. Lastly, the technology identifies ways to optimize TAG production from within the cell. Through genetic screening, tadA, tadR, tadB, and tapD were identified to influence TAG production. Overexpression of TadD, tadR, and tadB induces TAG accumulation.

Advantages

Low cost, efficient production of TAGs using optimized growth conditions:

- *Lower raw material costs:* Uses lignocellulosic biomass and glycerol as carbon sources
- *Lower operational costs:* Amenable to batch fermentation processes (simpler setup, easier to operate, lower risk of contamination, and lower operation and maintenance costs as compared to fed-batch fermentation)
- *High yield TAG production:* *R. opacus* grown in large batches can achieve up to 25.1 g / L

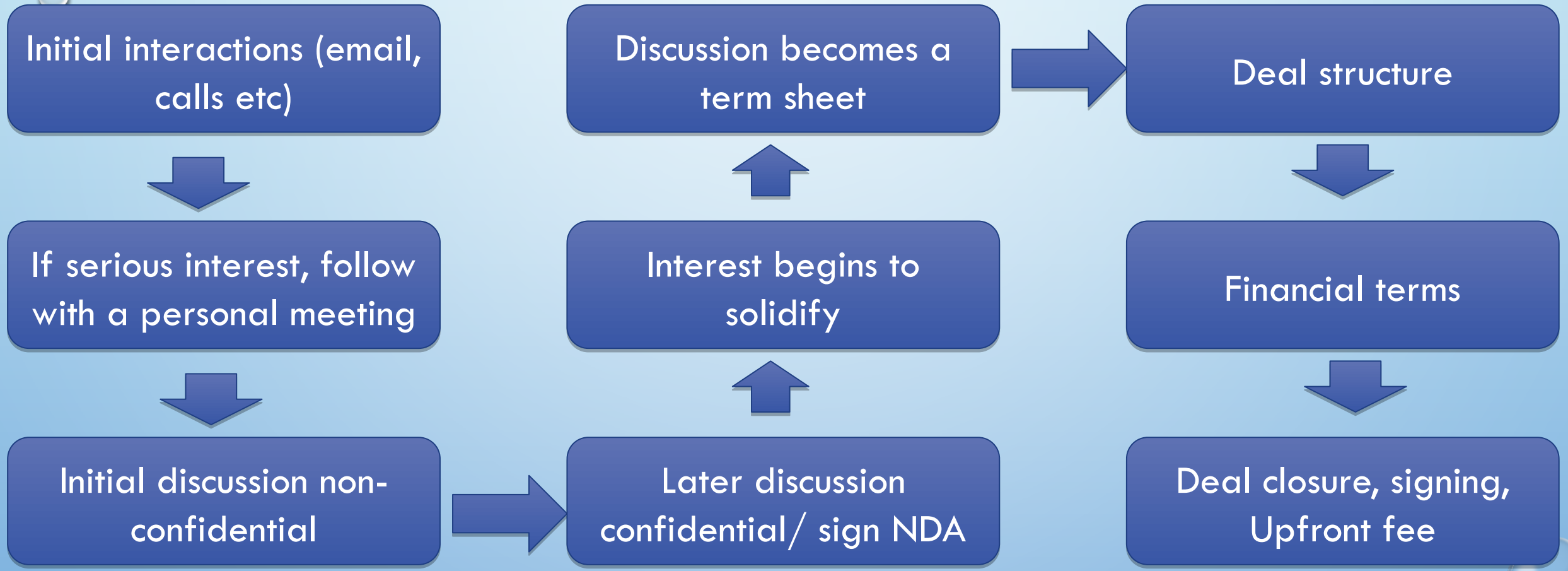
255 Main Street, room NE 18-501
Cambridge, MA 02142-1601
Phone: 617-253-6966 Fax: 617-258-6790
http://tlo.mit.edu

- Vehicles for communicating the value proposition
- Short, easy to read
- Non-confidential
- Pictures/ diagrams valuable

TECHNOLOGY TRANSFER/ LICENSING

GETTING STARTED

STEPS TO GET STARTED AFTER LEAD IS GENERATED



WHAT IS BEING TRANSACTED?

SOURCES OF VALUE IN TECHNOLOGY TRANSFER

- Knowhow (with presumed Freedom to Operate)
- Right to exclude others from practicing the art (valid patent rights) ➔ Source of sustainable, competitive advantage !
- Research and technical support for validating, scale-up, valorizing knowhow/patent rights and commissioning.

Courtesy: Dr Premnath V, Venture Center

QUICK INTRODUCTION TO IP

NO DISCLOSURE

- TRADE SECRET: NOT PUBLICLY DISCLOSED. INFORMATION ACCESS CONTROLLED BY CDA/NDA.

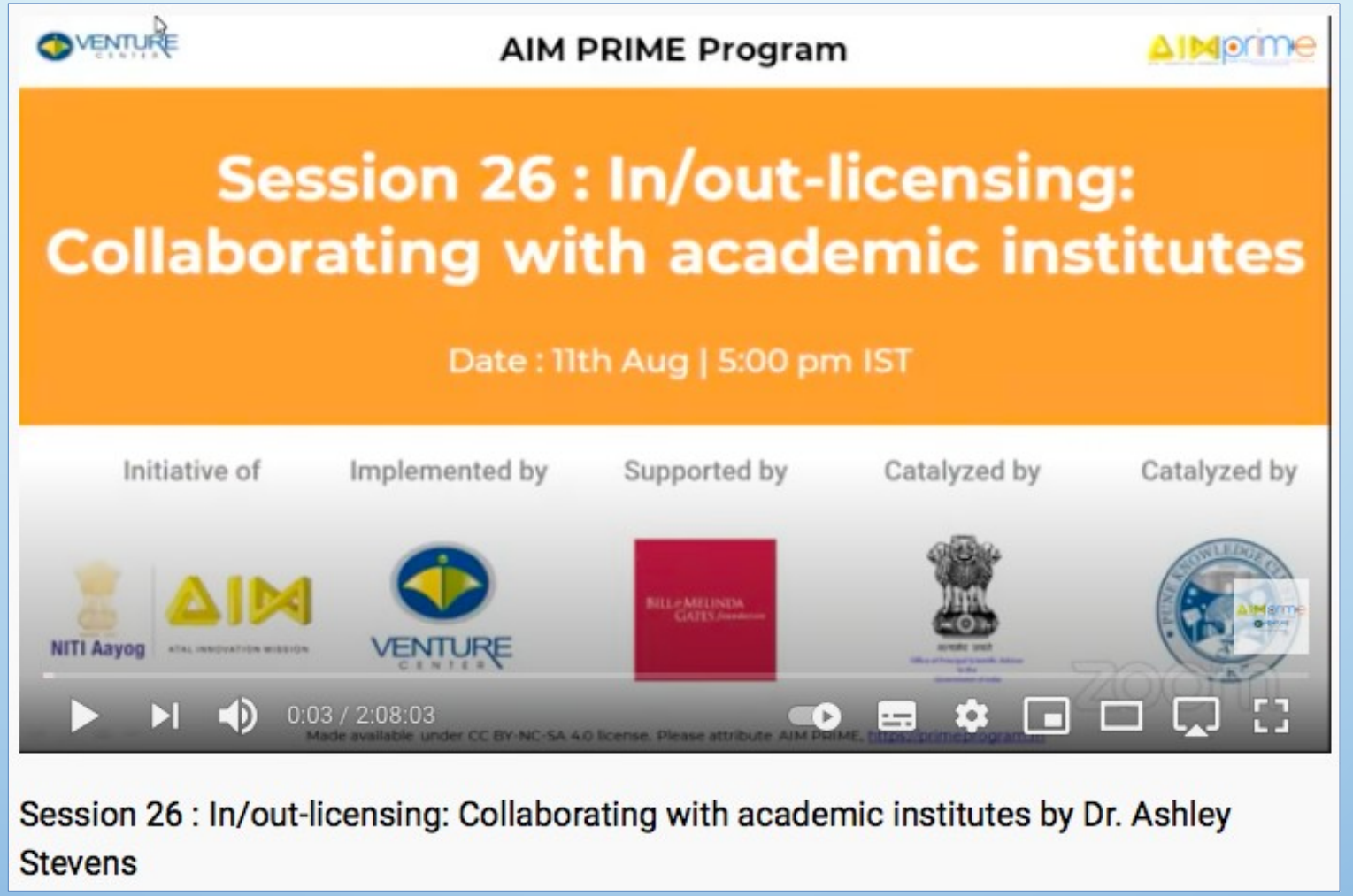
DISCLOSURE + FORMAL RIGHTS

- PATENT: PUBLIC DISCLOSURE. RIGHT TO EXCLUDE OTHERS FOR 20 YEARS.
- INDUSTRIAL DESIGN
- COPYRIGHT
- TRADEMARK
- PLANT VARIETIES
- OTHERS (CIRCUIT LAYOUTS, GEOGRAPHICAL INDICATIONS)

Courtesy: Dr Premnath V, Venture Center

TECHNOLOGY LICENSING BASICS

Following slides are from talk by Dr Ashley Stevens



Session 26 : In/out-licensing: Collaborating with academic institutes by Dr. Ashley Stevens

https://www.youtube.com/watch?v=y_hzqim7bSU

But WHY Does Someone License Something?

- Because they can't or won't develop a technology
  - University — Not part of the mission
  - Small company — Inadequate resources to take to market
  - Invention may not be sufficient to market a product
    - Platform technology, needs additional inventions to productize
- They do a deal whereby someone else bears the majority of the risk and receives the majority of the reward
  - The inventor / licensor receives part of the reward

Types of Licenses

In-Licensing

- Acquiring the right to develop and sell a product
  - Enabling license – patents + know-how
  - Freedom to operate – route through toll gates erected by blocking patents

Out-Licensing

- Granting rights to intellectual property to others
  - Enabling license – giving up a product to someone with more resources
  - Freedom to operate – extracting value from a platform technology

Cross-Licensing

- Trading IP rights
  - Mutual elimination of road blocks
  - Competitive or non-competitive products

FOCUS IP GROUP, LLC

VENTURE CENTER

AIM prime 12
ATAL INNOVATION MISSION

Where is Value Extracted in a License?

- Upfront fee
- Ongoing pre-commercial payments
  - Patent costs
  - Milestone payments
  - Annual Minimum Royalties
- Research collaboration and support
- Sublicense income sharing
- Earned royalties

License Agreement Outline

- Recitals
- Definitions
- License Grant
- Fees, Royalties, & Payments
- Patent Prosecution & Infringement
- Obligations of the Parties
- Representations & Warranties
- Indemnification & Insurance
- Confidentiality & Publication
- Term & Termination
- Miscellaneous

EXAMPLES OF TECH LICENSING FROM INDIA

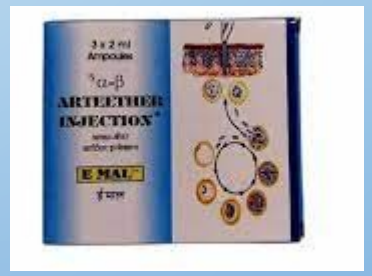
SUCCESSFUL TT FROM INDIAN R&D INSTITUTES

CSIR-IMTECH's know-how on thrombolytics: natural streptokinase (SK) – the first generation of CSIR's clot busters

Transferred to M/S Cadila Pharma. Ltd., Ahmedabad in 2001

Source: CSIR-IMTECH website

CSIR-CDRI and CSIR-CIMAP jointly developed EMAL α-β Arteether - Schizontocidal Anti-malarial for Cerebral & Chloroquine Resistant Malaria

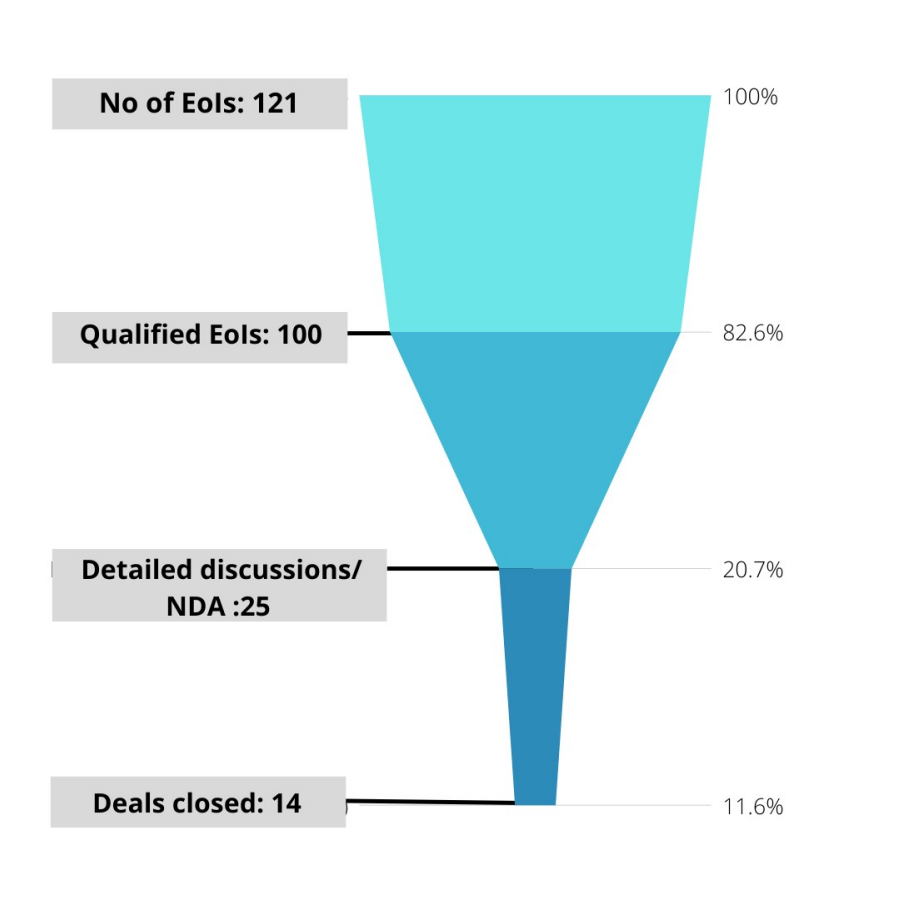


The technology was Licensed to M/s Themis Medicare Ltd, Mumbai

Source: CSIR website

LEARNINGS

WHAT IT TAKES FOR A DEAL TO HAPPEN?



- It is much harder than you expect
- It is difficult to get people's attention (even for a good technology)
- **ALWAYS** be marketing: key to success

What has worked for us?

- Personal contacts
- Networks
- Leads from the inventor

CREDITS

The information in the slides is adapted from the presentations by Dr Richard Cahoon, Dr Ashley Stevens and Dr Premnath V.

Contact:

Ms Pradnya Aradhye

Phone: +91-8805009010

Email: pradnya@venturecenter.co.in