



**Polyclone**  
Bioservices Pvt Ltd

## A Winning Collaboration for the Global Market

Naveen Kulkarni  
CEO  
Polyclone Bioservices

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

# Touch points

- Current Trends
- Discovery Informatics
- Opportunity
- About Polyclone
- Focus
- Case Study
- Benefits



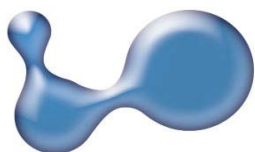
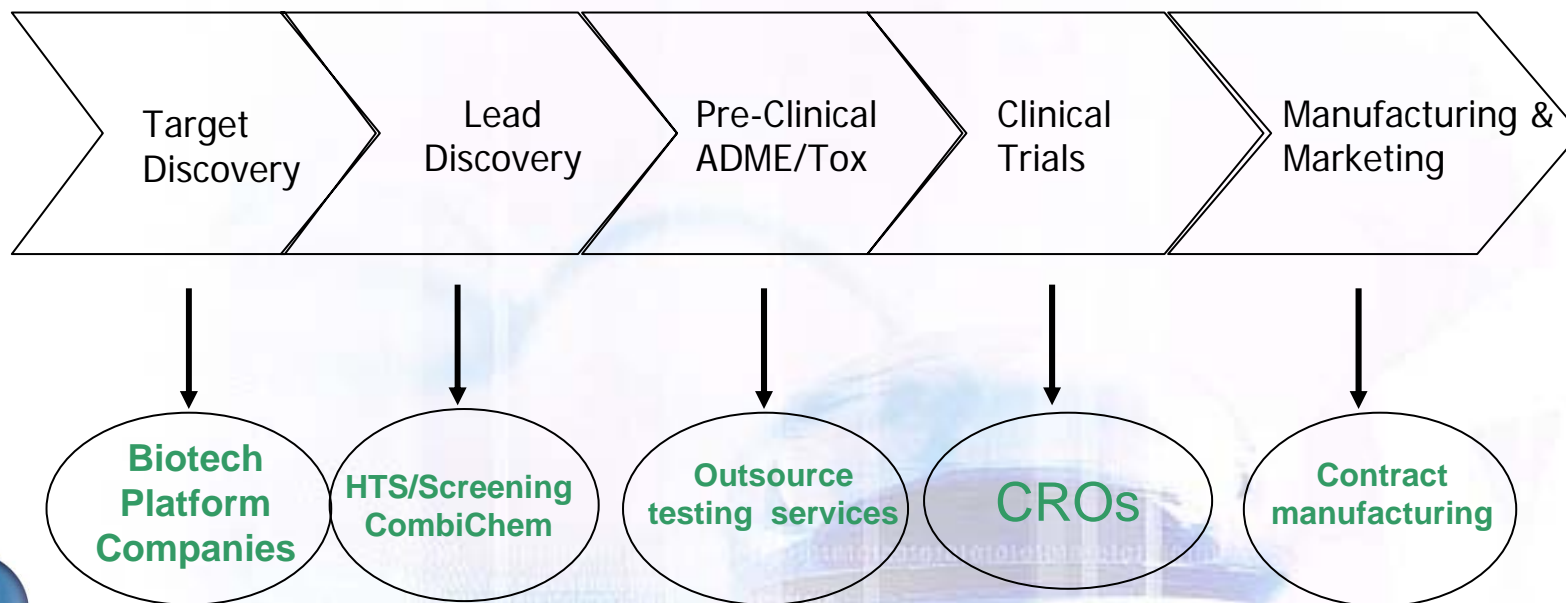
**Polyclone**  
Bioservices Pvt Ltd

# Market Snapshot

- **Drug Discovery Spending by Global Pharma is around \$ 20 billion - 2005**  
- E & Y
- **Approximately 60% is in the Target Discovery Space**
- **Cancer R&D is the single largest spending in biotechnology - \$9B - 2005**
- **Global R&D outsourcing - \$40 billion**
- **Outsourcing in India In 2005 – 06 was \$160 million mostly towards clinical trials**
- **Less than 1% has gone into Target Discovery**
- **Global target discovery CAGR 35% where as India still nascent, with a possibility of 100% growth**
- **There are no homegrown technology companies with high value platform technologies**
  - **For example: Illumina, CIPHERGEN etc or discovery companies like Evotec OAI (Germany)**

# Current Trends - Industry

*The decoupling of traditional value chain activities leads to specialization of business activities...and new models*



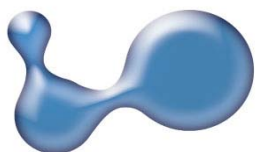
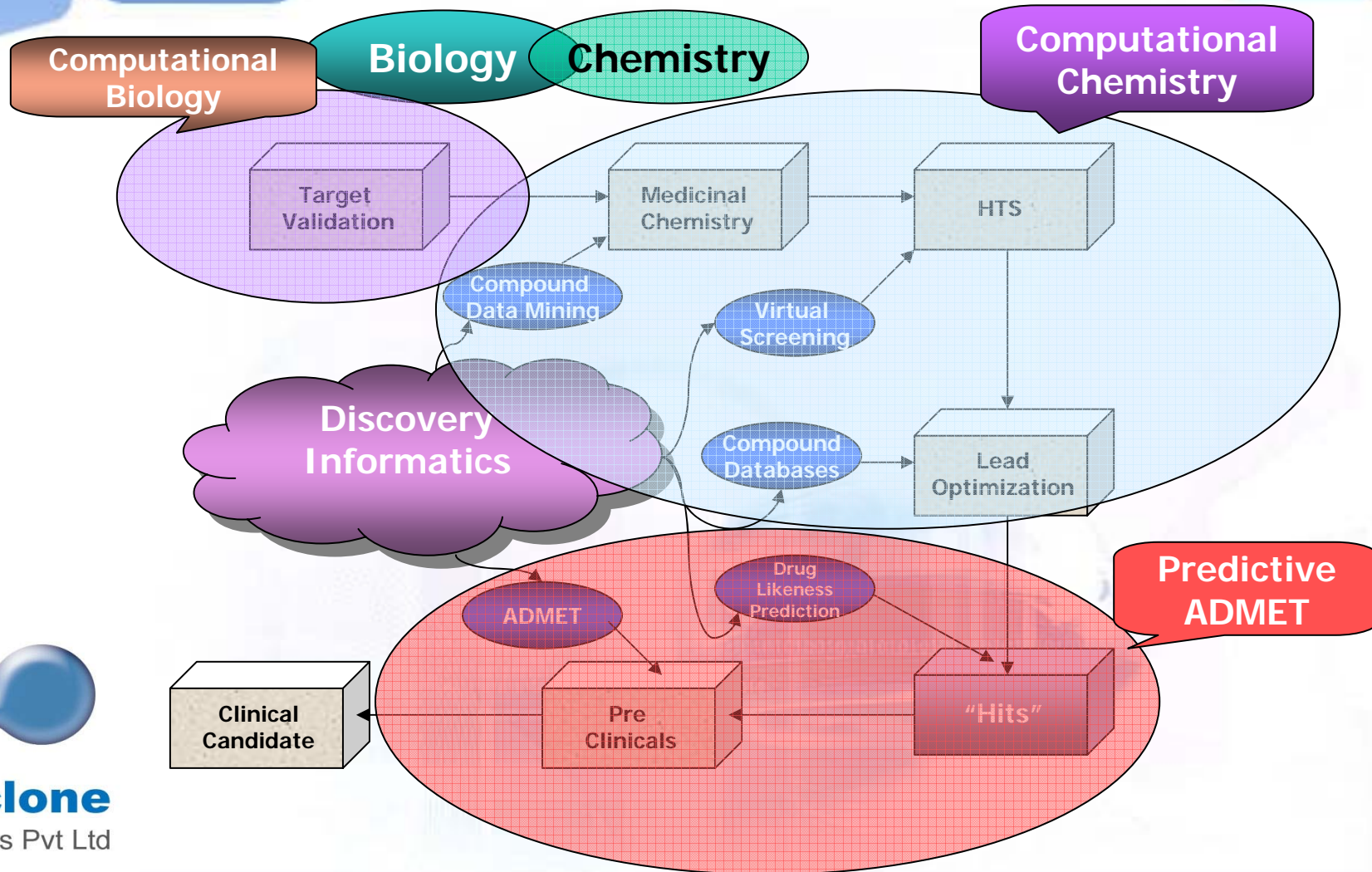
**Polyclone**  
Bioservices Pvt Ltd

# Current Trends - Insilico

- **Multiplexed Technologies**
  - Microarrays
  - Proteomics
  - High Throughput Screening
- **Technology Overlapping**
  - Pharmacogenomics
  - Toxicogenomics
  - Predictive ADME-Tox
- **Bridging the gap**
  - Data Integration and Analysis
  - Discovery to Clinical Studies



# Discovery Informatics



**Polyclone**  
Bioservices Pvt Ltd

# Opportunity

- **Small and medium pharma**
  - Do not have huge pipeline
  - Investment in R&D facilities is redundant
  - Outsource biology to university core facilities
  - Insilico????
- **Large pharma**
  - Either in license molecules from smaller biotechs or
  - Jointly develop the target along with core platform companies
  - R&D mindset – no stone unturned
- **Lucrative mix**
  - A combination of insilico capabilities with wet lab research
  - Access to knowledgebase in relevant disease area
  - Higher probability of target discovery
  - Technology???

# Enter Polyclone

## Vision

*“Polyclone’s vision is to develop better ways to fight diseases thereby enhancing the quality of human life.”*

## Mission

*“Polyclone's mission is to be the leader in life science discovery through innovation that is reproducible and cost effective.”*



**Polyclone**  
Bioservices Pvt Ltd

# About Polyclone

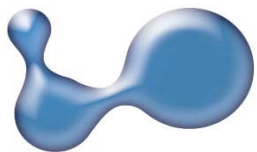
- Started operations in 2005
- Focus on insilico and target discovery services
- Team includes mix of experts from the industry in
  - Molecular Biology
  - Medicinal Chemistry
  - Bioinformatics
  - Cheminformatics
- Strategy : To offer discovery services both 'wet' and 'virtual'
- Guided by a board of advisors



**Polyclone**  
Bioservices Pvt Ltd

# Technology Focus – Insilico+Genomics

- **Microarrays**
  - **Microarray spotting and hybridisation**
  - **Array Design**
  - **Pharmacogenomics**
  - **Data Analysis Apps**
- **Real Time PCR**
  - **Molecular Diagnostics**
  - **Experimental Design**
- **RNAi, miRNA**
  - **Oligo Design and Analysis**
  - **Target validation**
  - **Inhibition, Activation Studies**
- **Partner Led Discovery programs**
  - **Genes to Lead™**
  - **Lead Discovery**



**Polyclone**  
Bioservices Pvt Ltd

# Engagement Models

## ➤ Insilico Genomics

- Oligo Design + Analysis
- Custom applications
- Experimental Design

## ➤ Data mining + modeling

- Microarray spotting and hybridisation
- Pharmacogenomics

## Phase I Lab Validation

## ➤ Wet Lab Assessment

- Assay development
- Molecular Diagnostics
- Cloning and characterisation
- Target validation

## ➤ Target Discovery Services

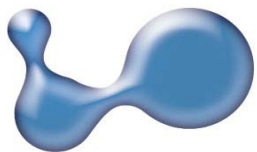
- Partner Led Discovery programs



**Polyclone**  
Bioservices Pvt Ltd

# Sample Areas

- **Cancer**
  - **Tumor Profiling**
  - **Micro RNA**
  - **Oral, Head & Neck, Esophageal**
- **Infectious Diseases**
  - **HIV Diagnostics**
  - **TB Detection Assay**
  - **Other**
- **Hemophilia**
  - **Nucleic Acid Based Dx**
  - **Factor Inhibition Studies**



**Polyclone**  
Bioservices Pvt Ltd

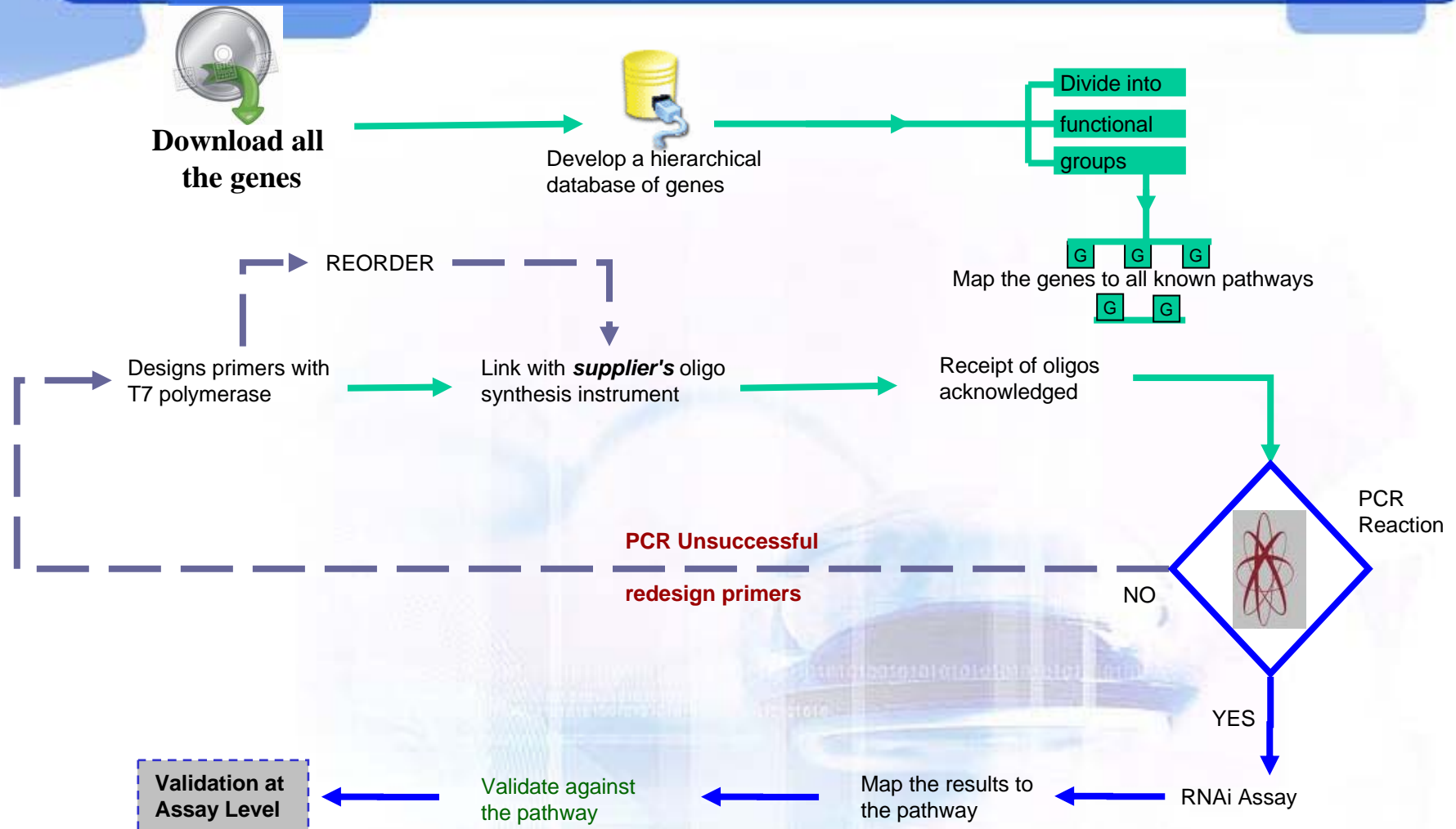
# Competitive Advantage

- Availability of disease population and clinical material
  - Cancer
  - HIV (Inf. Dis.)
  - Hemophilia
- IP pipeline by collaborative research
  - Nucleic Acid Based Dx
  - Cancer Biomarker
  - Antiviral Protein
  - First Right of Refusal
- Access to high-end instrmntn and tech. through partners
  - SUNY, Core facility
  - Sapient Discovery LLC
  - TATAA Biocenter, Sweden
- Availability of skilled resources and knowledge workers
  - IABT
  - KUD
  - KCTRI



**Polyclone**  
Bioservices Pvt Ltd

# Case Study – Cancer Target Discovery



# Benefits of Cross Border Relationships

- Normal time - 1.5 years and above

- Polyclone partnership

- ✓ System development - 3 months

- ✓ Experimentation - 3 months

- ✓ Final validation - 3 months

- ✓ Targets within a year!!!

- ✓ Projected no. of people: 5 scientists

Actual worked: 2 scientists

- ✓ Projected Costs ~ GBP 650k

Actual Costs ~ GBP 350

Cost savings - more than half !!!

Time savings - more than 50% !!!

- Value additions

- ✓ Integration with the oligo vendor

- ✓ Supplier receipt

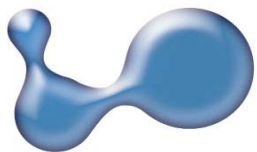
- ✓ Reorder for failed genes

- ✓ Quick turnaround time



# A Bouquet of Products

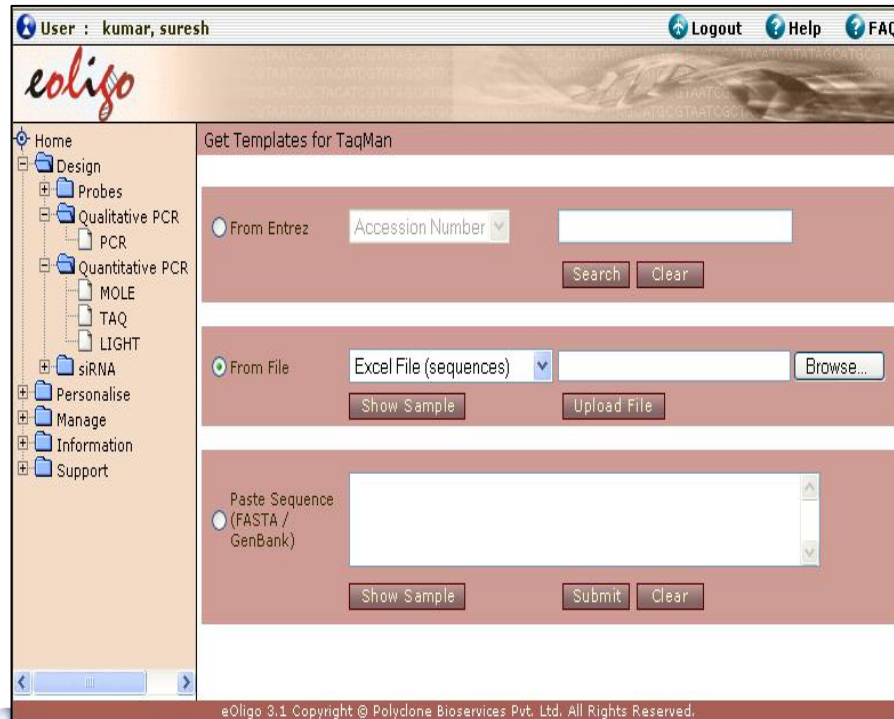
- ePrime – Currently under development with Eppendorf
- Tm Optimiser – A unique framework for using LNA oligos
  - miRNA
  - siRNA
  - microarray
  - Application across different platforms of hybridisation!!!



**Polyclone**  
Bioservices Pvt Ltd

# A Bouquet of Products Cont....

- eOligo – A web based high through put oligo design platform



User : kumar, suresh Logout Help FAQ

**eoligo**

Home

- Design
  - Probes
  - Qualitative PCR
    - PCR
  - Quantitative PCR
    - MOLE
    - TAQ
    - LIGHT
  - siRNA
- Personalise
- Manage
- Information
- Support

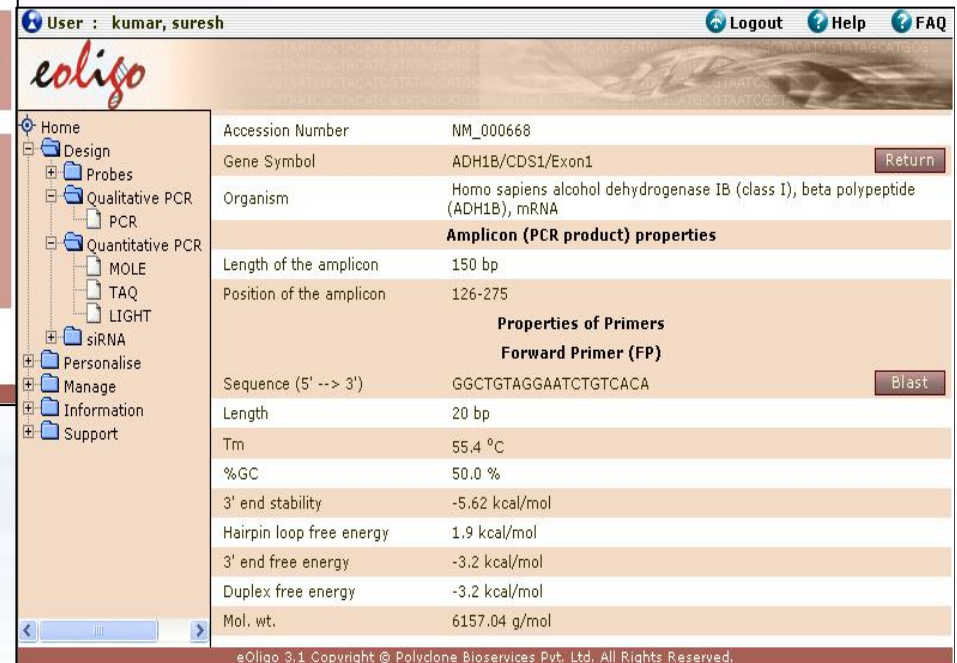
Get Templates for TaqMan

From Entrez Accession Number  Search Clear

From File Excel File (sequences)  Browse... Show Sample Upload File

Paste Sequence (FASTA / GenBank)  Show Sample Submit Clear

eOligo 3.1 Copyright © Polyclone Bioservices Pvt. Ltd. All Rights Reserved.



User : kumar, suresh Logout Help FAQ

**eoligo**

Home

- Design
  - Probes
  - Qualitative PCR
    - PCR
  - Quantitative PCR
    - MOLE
    - TAQ
    - LIGHT
  - siRNA
- Personalise
- Manage
- Information
- Support

Accession Number	NM_000668
Gene Symbol	ADH1B/CDS1/Exon1 <a href="#">Return</a>
Organism	Homo sapiens alcohol dehydrogenase IB (class 1), beta polypeptide (ADH1B), mRNA
<b>Amplicon (PCR product) properties</b>	
Length of the amplicon	150 bp
Position of the amplicon	126-275
<b>Properties of Primers</b>	
<b>Forward Primer (FP)</b>	
Sequence (5' --> 3')	GGCTGTAGGAATCTGTACA <a href="#">Blast</a>
Length	20 bp
Tm	55.4 °C
%GC	50.0 %
3' end stability	-5.62 kcal/mol
Hairpin loop free energy	1.9 kcal/mol
3' end free energy	-3.2 kcal/mol
Duplex free energy	-3.2 kcal/mol
Mol. wt.	6157.04 g/mol

eOligo 3.1 Copyright © Polyclone Bioservices Pvt. Ltd. All Rights Reserved.

# Partnership Profile



Emphron Infomatics, Australia

Hemophilia Federation India



SUNY Albany, USA



Sapiient Discovery LLC, USA



Karnataka Cancer Therapy and Research Institute, India



Universal Technology Inc, USA

Karnatak University, Dharwad, India

**TATAA Biocenter**

Tataa Biocenter, Sweden



De Montfort University, UK



Mena Diagnostics, Libya



Thank you

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

**USA:**

7638 B Airpark Rd  
Gaithersburg, MD 20879  
Phone : +1-301-990-8980  
Fax : +1-301-990-6997

**India:**

# 47, 25th Cross, 4th Main,  
Karesandra, BSK 2nd Stage,  
Bangalore - 560070  
Phone : +91-80-26717181  
Fax : +91-80-26919158

---

**Sales Contact**

[sales@pyclonebio.com](mailto:sales@pyclonebio.com)

**Further Information**

[info@pyclonebio.com](mailto:info@pyclonebio.com)

**Partnership**

[bizdev@pyclonebio.com](mailto:bizdev@pyclonebio.com)