



# Research and Development



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# Vision

- **Discover** and develop novel and affordable diagnostic assays
- **Enhance** Vimta's capability in areas of molecular biology, biologics and clinical assays
- **Conduct** basic research in selected areas to build Vimta's IP portfolio
- **Establish** mutually beneficial research collaborations with academic and biotech companies to increase Vimta's visibility



# R&D Team

- Eight research scientists (PhD/MD) with education and experience from international Universities and major MNCs
  - Expertise in all aspects of –
    - Molecular Biology
    - Immunology
    - Animal models
    - Bioinformatics
    - Neurosciences
    - Cell Biology
    - Proteomics
    - Pharmacology
- One MSc Bioinformatics
- Four PhD Scholars



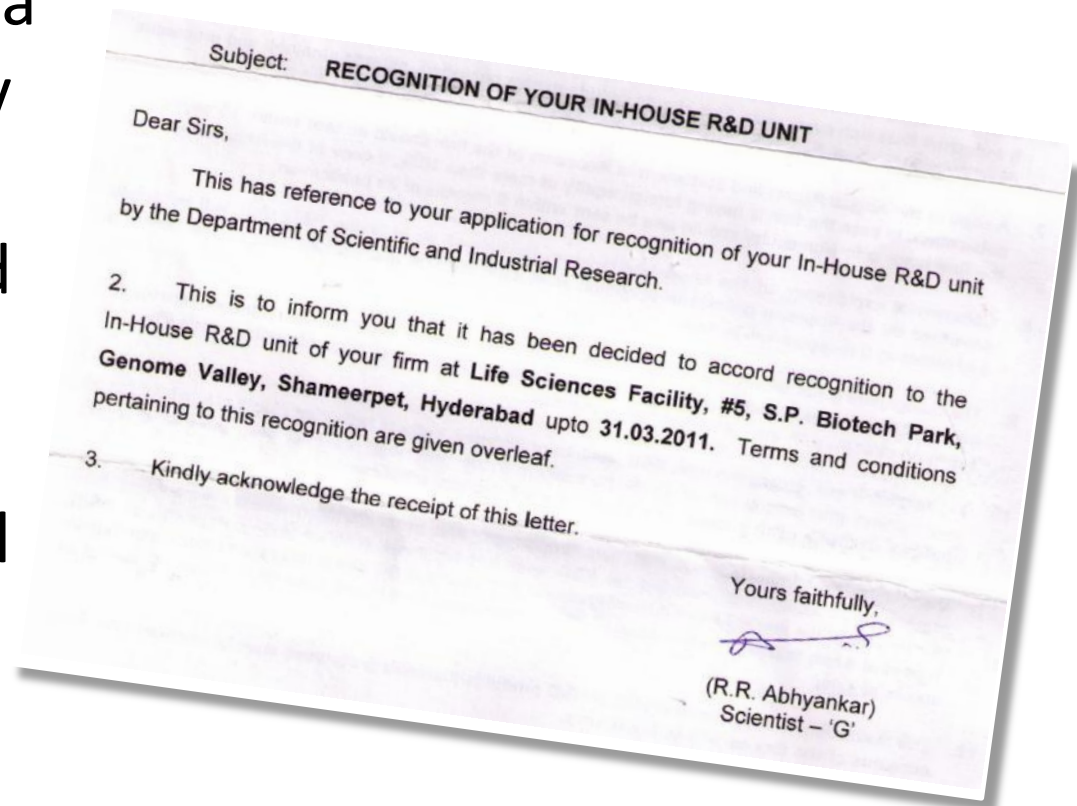
# Facilities

- The R&D unit has a fully equipped and dedicated lab in addition to a cell culture facility for development of in-vitro assays.
  - Genomics and Proteomics facilities
  - Sequencing facilities
  - Specialised equipment includes –
    - Luminex (Bio-Rad Bioplex 200)
    - Real Time PCR (ABI 7300)
    - Sequenom MassArray
    - LCMS (ABI 2000)
    - Veriskan Multimode plate reader

# DSIR Recognition

TU/IV-RD/2833

- R&D department, Vimta Labs was recognised by Government of India, Ministry of Science and Technology, Department of Scientific and Industrial Research in December 2008



# Deakin-Vimta PhD Program

- Vimta has entered into a collaboration with Deakin University, Melbourne, Australia to train scientists for PhD
- The program is four years duration with ~ 6 months in Australia.
- At the completion of the program the degree will be awarded by Deakin University
- All fees and expenses in Australia are paid by Deakin University. A stipend equivalent to CSIR JRF is paid by Vimta
- First four students enrolled in July 2009



# Collaborations

- Venture with Columbia University to develop MassTag PCR panels for detection of infectious diseases

**Columbia University Licenses Pathogen Detection Technology to Vimta Labs -- Platform Allows for Rapid Identification of Multiple Pathogens in Single Test**  
Released: 8/17/2009 8:00 AM EDT  
Source: Columbia University Science and Technology Ventures  
Newswise — Columbia University Science & Technology Ventures announced that it has licensed a pathogen detection technology called MassTag PCR to Vimta Labs to develop clinical diagnostics for patients in India.

# Current R&D Programs

- Support to Clinical Reference Laboratory
  - Development of novel diagnostic assay
  - Multiplex diagnostic panels
- Capability development in selected areas
  - Biologics capabilities
  - *in vitro* assays
- Applied Research
  - Identification of disease & diagnostic cancer biomarkers
  - Nanotechnology in diagnostics and drug delivery
  - Point of care tests and devices

# Support to Clinical Reference Laboratory

- Development of diagnostic assays including –
  - ‘Conventional’ PCR assays –
    - Real-time PCR, Multiplex PCR
      - e.g. HPV, HSV1/2, CMV, DMD
  - Sequencing based assays
    - e.g. MTHFR, MCAD, JAK2 Factor V, Factor II
- Multiplex panels using MassTag PCR
  - DNA encephalitis, respiratory viruses etc.

# Biologics Capability Development

- Establishing assays for analysis of large molecules, e.g. insulin
    - Pharmacokinetics
    - ELISA assays
    - Immunogenicity
    - Neutralization assays
    - Polyclonal and monoclonal antibody production, purification and characterisation
  - Luminex 200 multiplex flow cytometry
    - Cytokines
    - Kinase panels
- in cell lines, primary cells and human samples

# *in vitro* Capability Development

- Establishment of *in vitro* facility – March 31, 2010
  - Cell culture facilities
  - Protein expression in *E.coli*, human and insect cell lines
  - Protein purification by FPLC
  - HTRF platform for screening of cell surface receptors
  - VarioSkan multimode reader for Luminescence, FRET etc.
- Establishing laboratory for radiobiology
  - TopCount
  - Liquid Scintillation counter, etc.

# Applied Research

## Disease and Diagnostic Markers of Cancer

### Genomics

- Expression
  - mRNA
  - miRNA
- Methylation
- CNV
- SNPs

### Proteomics

- Western blot
- MALDI-TOF/TOF
- ELISA
- Luminex Multiplex assays
- Ab generation

### Metabolomics

- Metabolite based markers
- MassTag applications
- Open platform
- Closed platform

### Nanotechnology

- Drug delivery
- Diagnostic application

In-vitro experiments – disease specific cell lines

In-vivo experiments using SCID and Nude mice

Experiments with clinical samples

