



Drug Discovery in China

Media Visit to Roche in China

Shanghai 30 October 2005

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Head of Research, Chief Scientific Officer

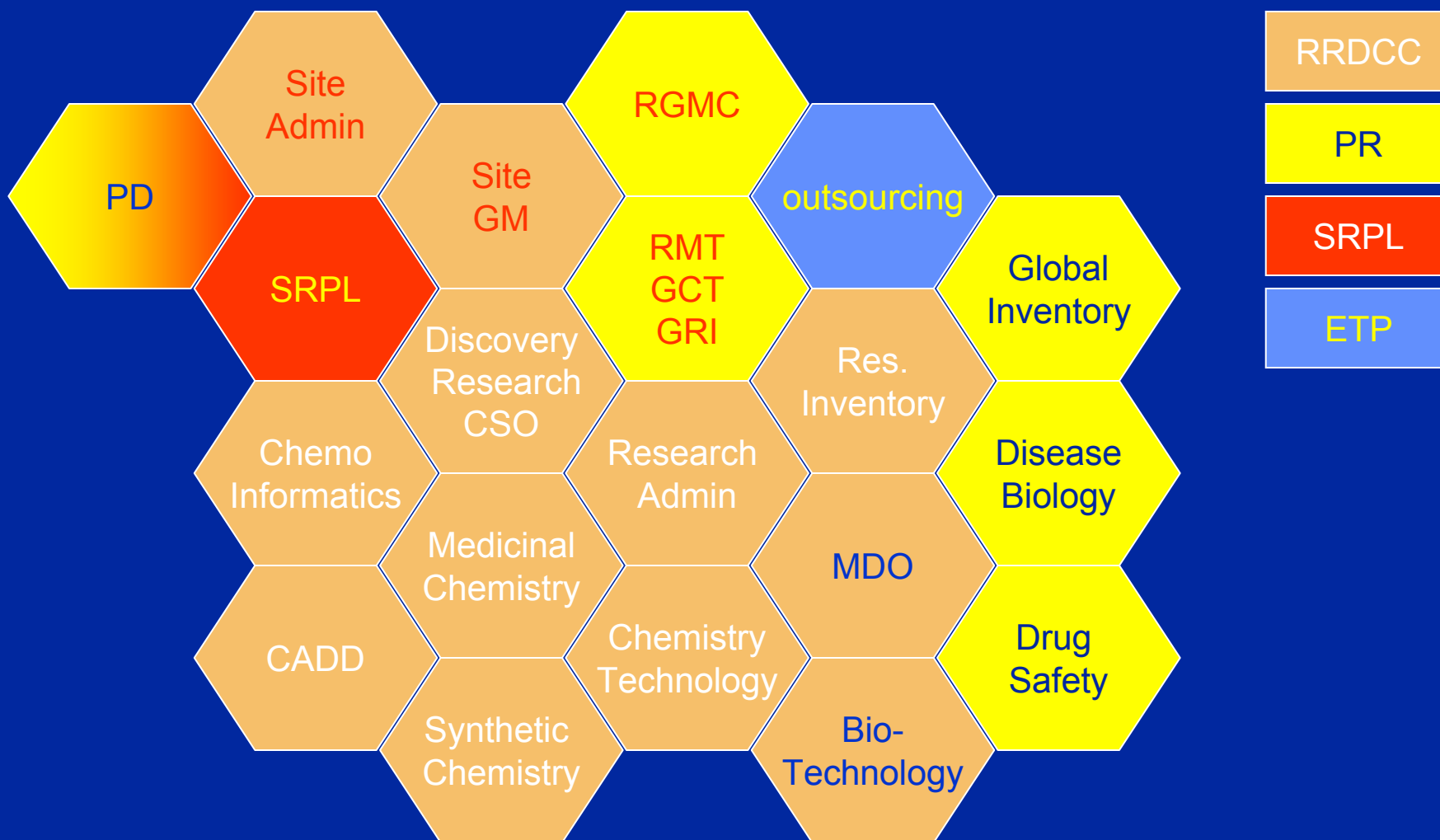
Roche R&D Center (China) Ltd.

Research Business Model in China

- Contract Research: Fee for Service (FFS)
 - Outsourcing center for building block, intermediates, screening libraries
 - standard compounds, API
 - Exclusive Contract Research: FFS and technology transfer
 - Synthetic chemistry work
 - Wholly owned: Drug Discovery Research
 - Drug design, synthesis evaluation and SAR development
 - Share corporate data and knowledge
 - Lead generation and optimization,
 - Intellectual property creation
- Contract Research: Fee for Service (FFS)
 - Cost driven
 - No investment in infrastructure
 - Get what you pay for
 - Exclusive Contract Research: FFS and technology transfer
 - Effectively manage the task
 - Wholly owned: Drug Discovery Research
 - High initial investment in infrastructure
 - Operation within firewall
 - Long term commitment to employees
 - High value creation in pharma research

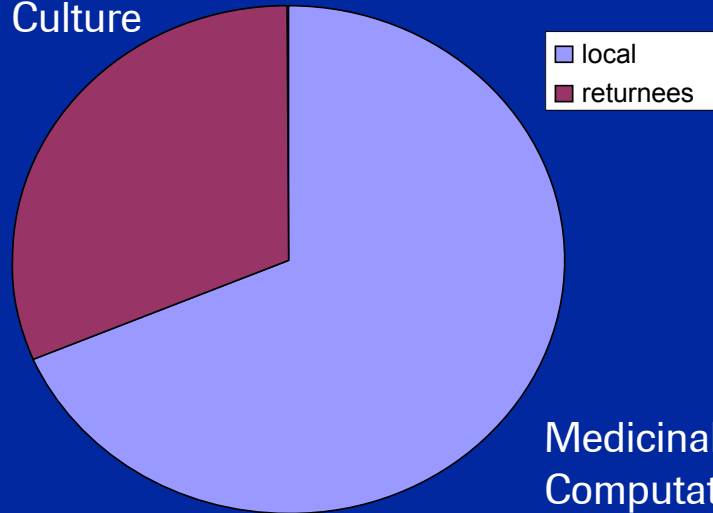


Discovery Research Shanghai



Research Staff in Shanghai

Knowledge **Returns**
 Experience
 Culture

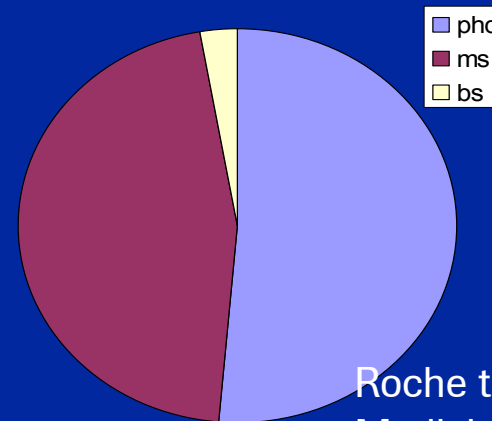


Medicinal Chemistry
 Computation science
 Organic Chemistry
 Analytical Chemistry
 Information Science
 Inventory and logistics
 Automation technology
 MDO and biology

Roche good business practice
 Performance standard
 Reward and recognition
 Competency and career development plan

Educational Background

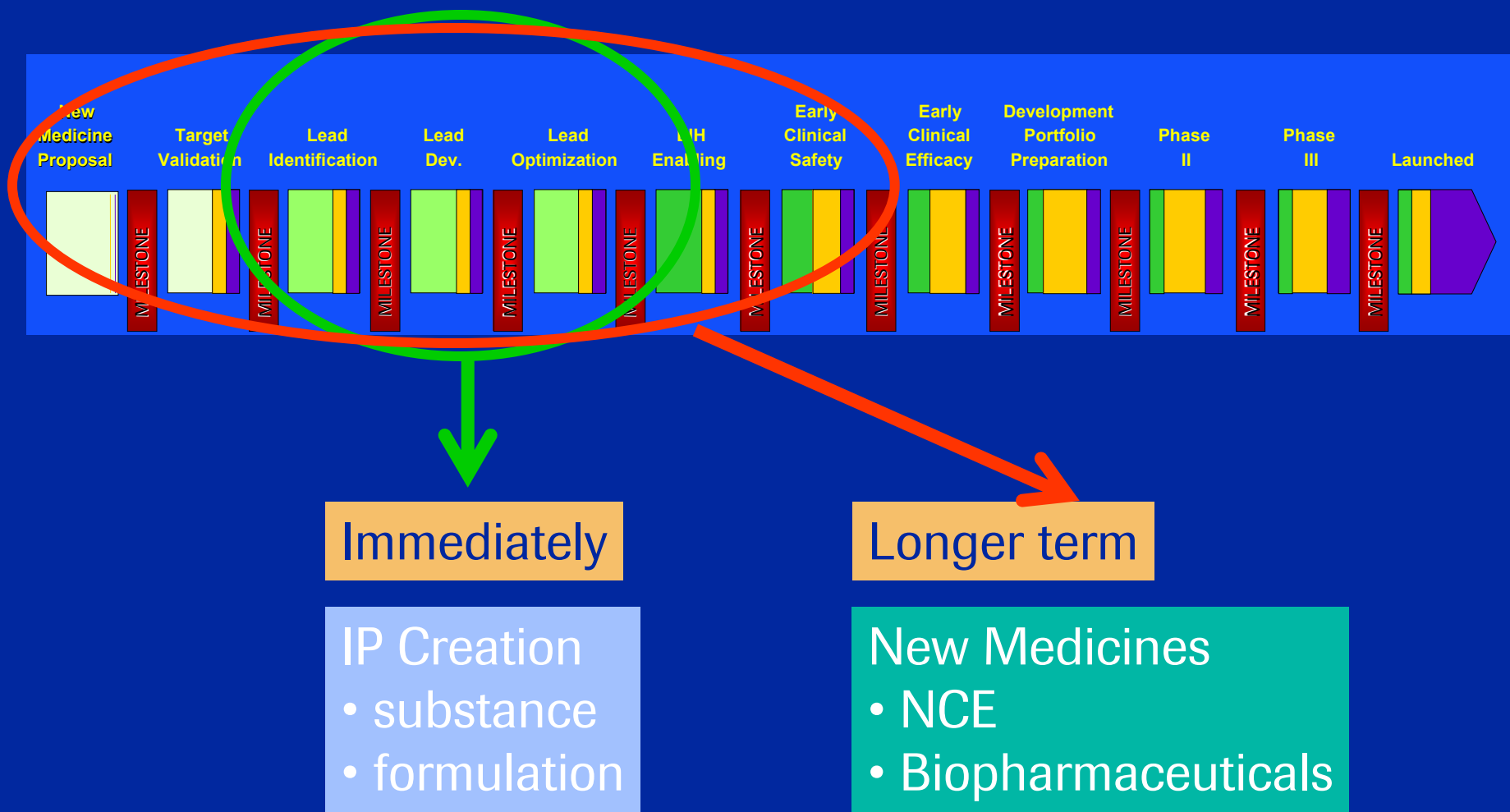
Education Back Ground



Roche training
 Medicinal Chemistry Course
 Research Symposium
 Communication skill class

Drug Discovery at RRDCC

Focus on value creation opportunities



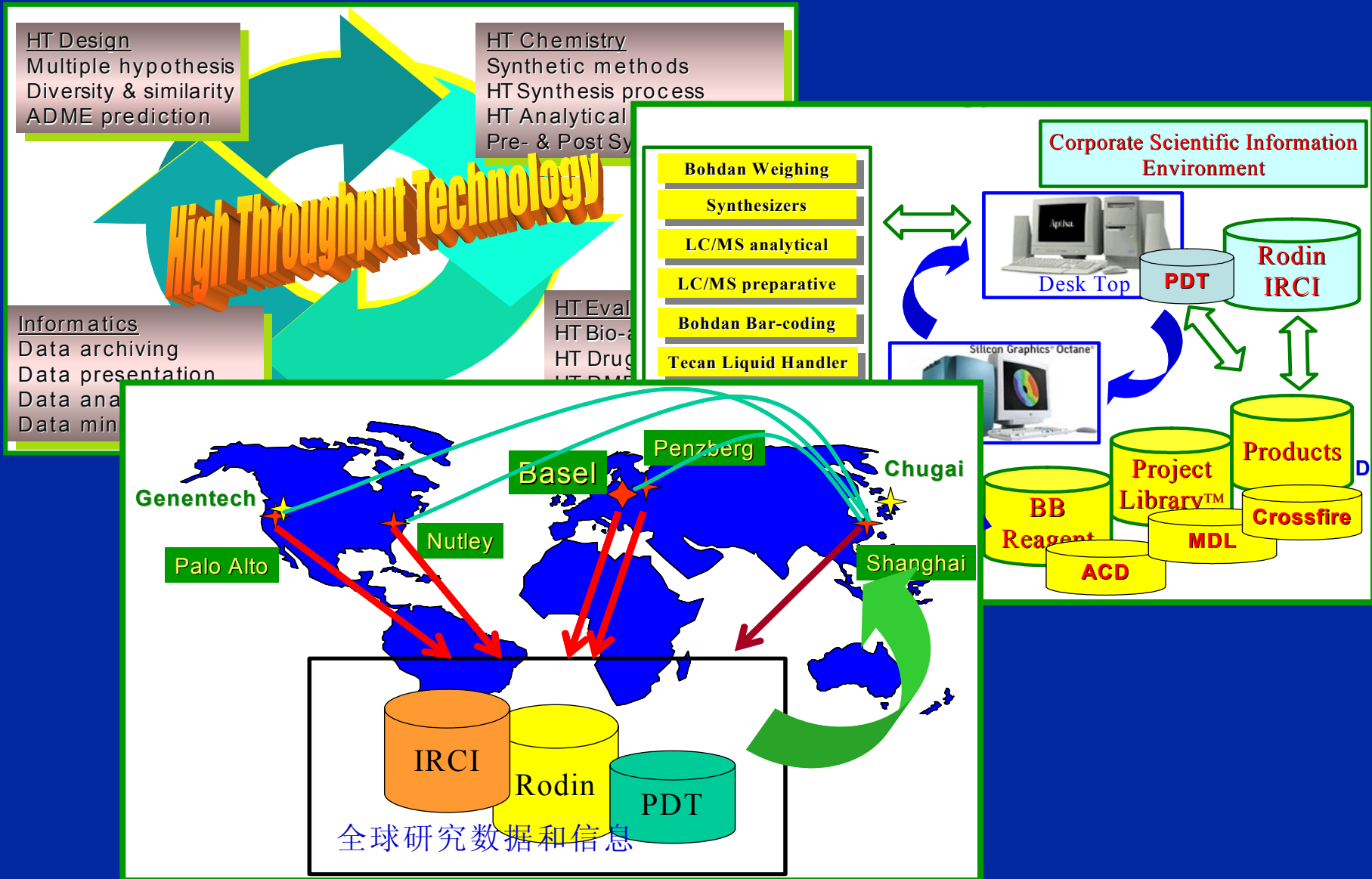
Immediately

IP Creation
• substance
• formulation

Longer term

New Medicines
• NCE
• Biopharmaceuticals

Drug Discovery Research SH



Our 1st year experience

- **Set up a fully functional research site in China**
 - Can be done in 1 year from scratch
- **Talent from overseas and China**
 - 10 returnees to form scientific core team
 - >50% Ph. D and < 10% BS
- **Technology transfer**
 - Quality of technical supporting team is a key for successful operation
 - Best microwave and LCMS Prep technology at Roche

Our 1st year experience

- **Research supply**
 - 7-10 day from global suppliers: time is a issue
 - 1-3 day from local supplies: quality is still an issue
- **Knowledge transfer**
 - Training program at Roche sites
 - Global team membership
- **Data and Information sharing at global standard**
 - Scientific information
 - Pharma R&D data and information
 - Research information



Our 10 month experience in research

- **Achieved real time medicinal chemistry research in lead generation**
 - 1st reaction on Dec 23, 2004
 - 1st compound registered to IRCI on Dec 29, 2004
 - 1st lead molecule tested in Jan 2005
 - 1st nanomolar lead identified in March
 - 1st X-ray structure of ligand/target complex in June
 - 1st 1000 lead molecules created in July
 - 1st patent filed in September and more to come in 2005
- **Achieved better understanding of China Biotech and Pharma Industry**
 - Good performance in chemistry research
 - Strong desire to create biomedical research base
 - Integration is key for future success
 - Talent pool
 - Highly motivated research scientists at MS and Ph.D level
 - Lack of experienced research leaders in drug discovery

RRDCC Project Portfolio

RRDCC is currently working with of colleagues in the following areas

- Target based anticancer medicines that target on cancer cell cycle regulation and apoptosis: **Nutley and Penzberg**
- Anti HIV targets for ACIDS: **Palo Alto**
- Novel therapy for Alzheimer disease: **Basel**
- New treatment of obesity medicine: **Nutley**

Conclusion

- **Pharma R&D in China**
 - 2000: Research collaboration
 - 2002: Outsourcing
 - 2005: Best sourcing and all above
- **Roche is a leader in Pharma R&D in China**
 - Genomic center collaboration
 - Outsourcing to Shanghai Institute of Organic Chemistry
 - Basic research in drug discovery