

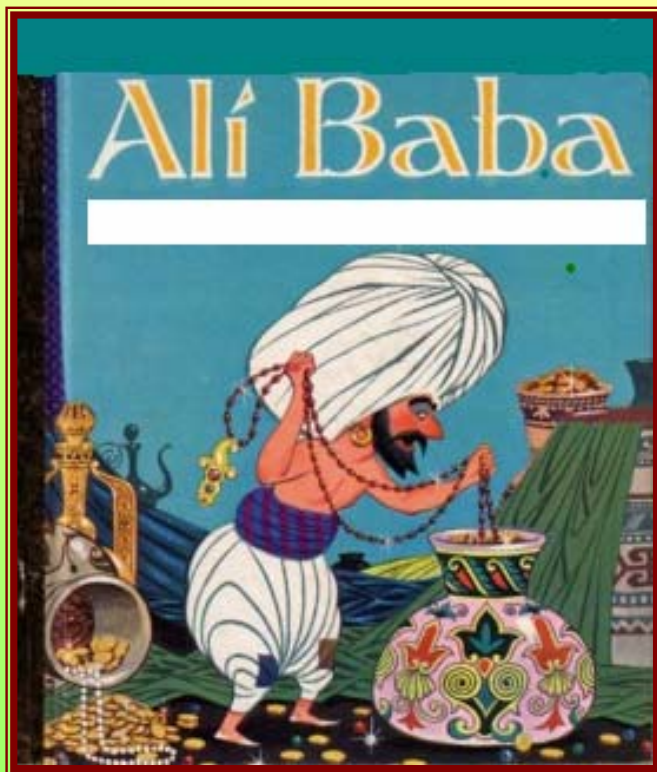


**Panacea
Biotec**

In Support of Life



Treasured Secrets for successful collaborations in Biotech Industry



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The Biopharma Market

- Present global Biopharma \$ 71 bio.
- Growth rate 16%.
- Current sales of biotech products worldwide \$ 40 bio.
- By 2010 likely to cross \$100 bio. mark.

Indian Biopharma Market

- Valued at \$ 1.05 bio.
- Growth rate 32%.
- India's share in global Biopharma market 1.5%.
- 400-500 biotech drugs are under clinical development.

India is poised to become a leading biopharma base with encouragement and innovation. In another 3-5 years, India looks forward to be at par with the west.

Biotechnology Scenario

- This year biotechnology industry has completed 30 years of its inception.
- **Key Industry Characteristics:**
 - Highly technology and R&D driven
 - Capital Intensive – cost of developing new drug nearly \$ 1 bio.
 - Long gestation period
 - Therefore, high entry barriers and potentially higher returns
- This industry generates revenue over US \$ 60 billion and is rapidly emerging as a global industry.
- Nevertheless, there are critical gaps in strategic need that can best be met by bringing together industries in developed (West) and developing (East) world.



VACCINE SCENARIO

- The Indian vaccine market is estimated to be around US \$ 500 million with the private vaccine market accounting for around US\$ 100 Million.
- The Indian Vaccine market is dominated by traditional vaccines like Tetanus Toxoid, Polio, DPT, Typhoid and Hepatitis B and some new vaccines like Rabies, acellular pertussis based DTaP, Hepatitis A, Varicella vaccine etc.
- Currently, as many as 22 companies both local and multinationals are marketing about 25 vaccines in the Indian market for different diseases.

VACCINE - Contribution in Polio Eradication

- Since its inception in 1988 the Global Polio Eradication Initiative has cut the transmission of polio by more than 99 percent.
- In 2005, the world confirmed fewer than 1900 cases of polio as against around 50,000 in 1988.
- There are now only four countries that are affected by polio – Nigeria, India, Pakistan and Afghanistan – the lowest number in history.
- Almost 10 countries have reported cases of polio from persons migrated from other countries.

VACCINE - Contribution in Polio Eradication

- During the year 2005-06, in addition to the traditional Trivalent Polio Vaccine, two Monovalent Polio Vaccines for mOPV Type-I and mOPV Type –III were also added in the immunization schedule.
- The demand for Polio Vaccine has increased during the past two years due to increase in the number of immunization days.

Vaccine Development in India

- India has a critical role to play in the global efforts for AIDS vaccine research and development.
- The initiative has helped strengthen existing research infrastructure at the trial sites.
- It has helped build capacity of the Indian research staff and scientists involved in the studies.

Vaccine Development in India

- **Several vaccine candidates are being tested simultaneously in India to accelerate the process of finding an effective AIDS vaccine.**
- **Several vaccine candidates have been identified as suitable by a panel of experts.**
- **Presently two candidates have been prioritised for Phase I clinical trials in India :**
tgAAC09, the Adeno-Associated Virus (AAV) based vaccine
TBC- M4, the Modified Vaccinia Ankara (MVA) based vaccine

Vaccine against Dengue virus

- Dengue a deadly disease carried by Aedes mosquito
- 2500 mio. people (2/5th of the world's population) at risk from Dengue.
- WHO estimate, there may be 50 mio. cases of Dengue infection world wide every year.
- Panacea Biotec has licensing agreements with NIH USA for the development of recombinant chimeric Dengue tetravalent vaccine.
- The vaccine will be effective against all 4 strains of Dengue viruses and will cater to adult and children population.

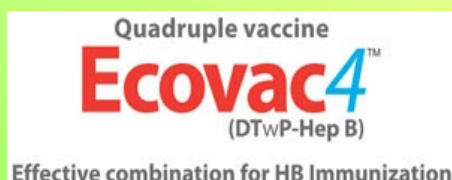
Vaccines Segment – Business Profile

■ Panacea Biotec

- Established presence of over 20 years in vaccines
- FY06 Turnover: Rs. 5,364mn (US\$ 120 mn)
- Dedicated R&D center for de-novo vaccine development
- Established networking with key global opinion leaders such as Rotary, WHO, UNICEF, etc.
- Launched innovative branded combination vaccines - Ecovac (Hep. B + DTP), Easyfive (Hep. B+DTP+Hib) and Easyfour (Hib+DTP) in India

■ Initiatives for the Vaccines Business

- Several new vaccines and technologies under various stages of development such as thermostable vaccines
- WHO pre-qualification for Hep. B & innovative combination vaccines in advanced stage
- Exports to Latin America, SE Asia, CIS republican countries, Africa through international marketing collaboration
- Development of Recombinant Anthrax Vaccine – potential to supply to US Govt. under national stockpiling programme



Vaccines Facilities

Vaccine Formulation Facility, New Delhi, India

A state of the art Vaccine Formulation facility is:

- Built up area of more than 50,000 sq ft.
- Three vial filling lines with a capacity of 820 million doses per annum
- WHO cGMP approved facility

Recombinant Vaccine Bulk Production Facility, Lalru, Punjab, India

A state of the art Recombinant Vaccine Bulk Production facility is:

- Built up area of more than 20,000 sq ft.
- Capacity to produce 25 million doses p.a.
- Set up in compliance with US-FDA, UK-MHRA and WHO cGMP standards.


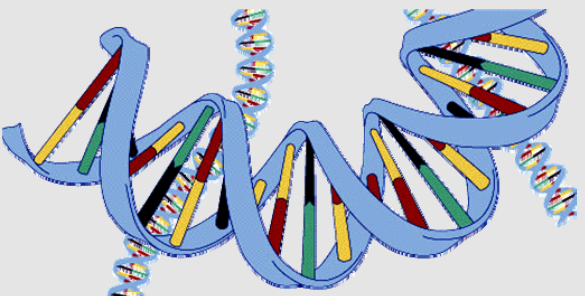

New Projects under Implementation

- **Baddi, Himachal Pradesh, India:**
 - Vaccine Formulation Facility:
- **Lalru, Punjab, India:**
 - Bacterial and Cell Culture Vaccine Facility
 - Tetanus Vaccine Facility



Critical Vaccines Under Development



Product	Manufacturing & Analytical Validation	Developmental stages Mfg & Analytical Standardisation	Pre-Clinical	Clinical Trial Phase I	Clinical Trial Phase II / III	Final Manufacturing
Recombinant Anthrax Vaccine	Completed	Completed	Completed	Phase I/IIa in Progress – expected to be completed by Q1 FY07		
Sabin based Inactivated Polio Vaccine	Completed	Completed	Completed	To be initiated shortly		
Hepatitis A Vaccine	Completed	Completed	To be initiated shortly			
Menigococcal (ACYW135) Conjugate Vaccine	Completed	Completed	To be initiated shortly			
Pneumococcal 7 strain Vaccine	Completed	Completed	To be initiated shortly			
Japanese Encephalitis Vaccine	Completed	In Progress				
Varicella Vaccine, Live Attenuated	In Progress	In Progress				
Hexavalent Vaccine	In Progress	In Progress				
Dengue Tetravalent (recombinant)	In Progress	In Progress				

Panacea Biotec at a Glance

Business

- Vaccines
- Branded Pharmaceutical Formulations
- Biopharmaceuticals

Achievements

- 2nd largest Vaccine Producer of India,
- 3rd Largest Biotechnology Company in India (ABLE Survey 2006)
- Amongst top 50 Pharmaceutical companies in India

Infrastructure

- World Class Manufacturing Facilities
- Established Sales & Distribution Network
- Four Research & Development Centers

Collaborations

- Joint Ventures, Collaborations & Tie-ups with leading national & International Academic/ Research Institutes and Corporation e.g. Novartis(Chiron), Sanofi Pasteur, NIH USA, CBL UK,, NVI Netherlands, BCIL India etc. for In-licensing of technology & Products

Manpower

- ~2,300 permanent employees out of which,
 - ↗ ~280 in R&D, ~500 in manufacturing and ~1,100 in sales and marketing

Financials

- | | |
|--------------------------------------|---------------------------------------|
| ■ FY05 (Standalone) | ■ FY06 (Standalone) |
| ↗ Turnover: Rs.3,255 mn (US\$ 73 mn) | ↗ Turnover: Rs. 5,364mn (US\$ 120 mn) |
| ↗ Net Profit: Rs.301mn (US\$ 7 mn) | ↗ Net Profit : Rs. 609mn (US\$ 14 mn) |

Collaborations and Tie-ups



- Joint venture with worlds fifth largest vaccine group for marketing and distribution of combination and other vaccines



- Research collaboration



- OutLicensed Nimesulide Transdermal gel & Nimesulide injection for sales and marketing, in Russian Federation and India respectively.



- Panacea Biotec to manufacture and market IPV based combination vaccines for Global Markets (excl. Netherlands, Finland, Norway & Denmark)



- 10 year in-licensing agreement for development, manufacture and marketing of Anthrax Vaccine starting November 2001



- 10 year exclusive in-licensing agreement for Japanese Encephalitis vaccine starting May 2004

Collaborations and Tie-ups



- Joint venture with CIGB, Cuba for production of recombinant HepB vaccine



- Development of thermostable vaccines, which eliminates need for cold chain for storage and distribution of vaccines



National Institute
of Health, USA

- In-licensing technology for development of hormone based formulation for hair growth



National Research
Development
Corporation, India

- Panacea Biotec to manufacture and market Foot & Mouth Disease (FMD) vaccine developed by Indian Veterinary Research institute (IVRI) in India & International Markets.



PT. Bio Farma,
Indonesia

- Panacea Biotec to manufacture and market Measles vaccine in Global Markets

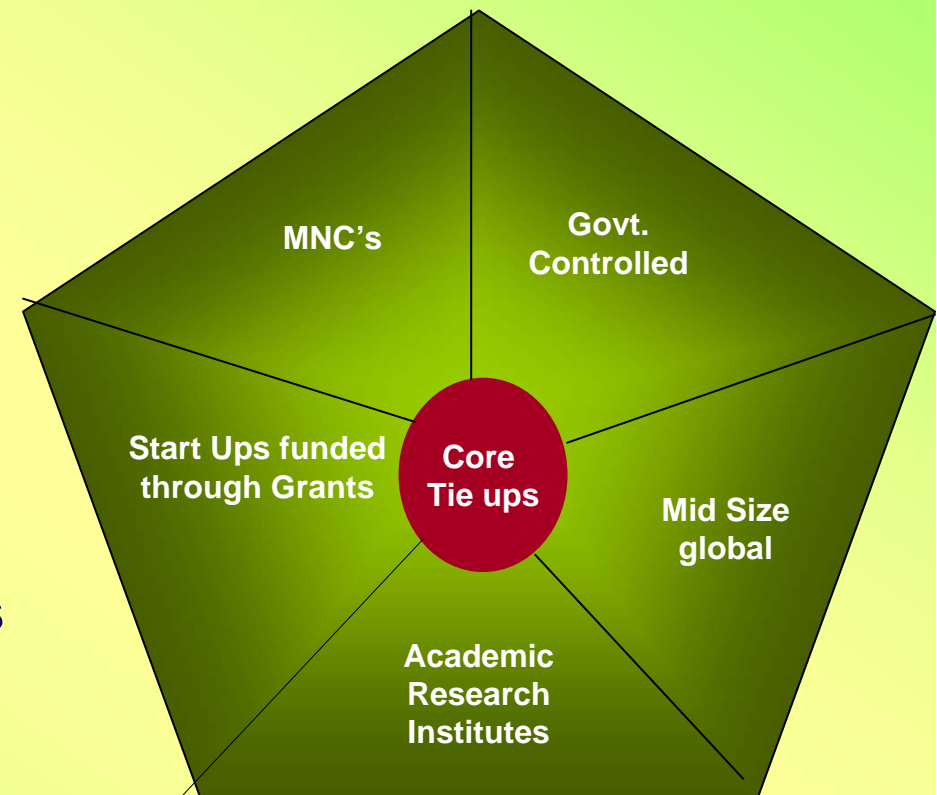
Collaboration and tieup

Types of collaborations

Panacea Biotec's Challenge in diverse collaborations

Successfully managed :

- ✿ Diverse types of collaborators
- ✿ Different systems, cultures and backgrounds that they come from
- ✿ Different aspirations each collaborator has
- ✿ When competitors became collaborators
- ✿ Different sizes in terms of value and number they come from

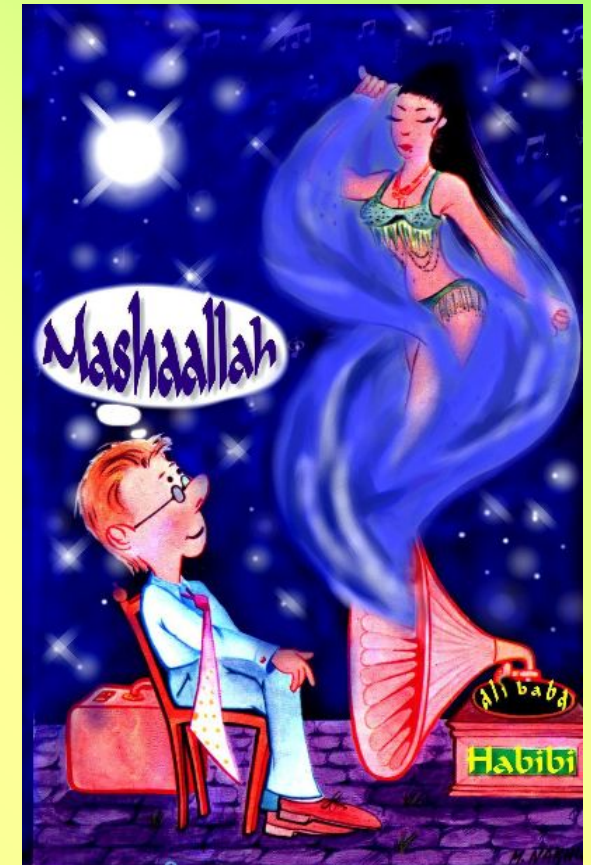


Challenges and Management

Transparency

- Culture of open communication for sharing information.
- Do not hide or suppress factual information.

Outcome → TRUST

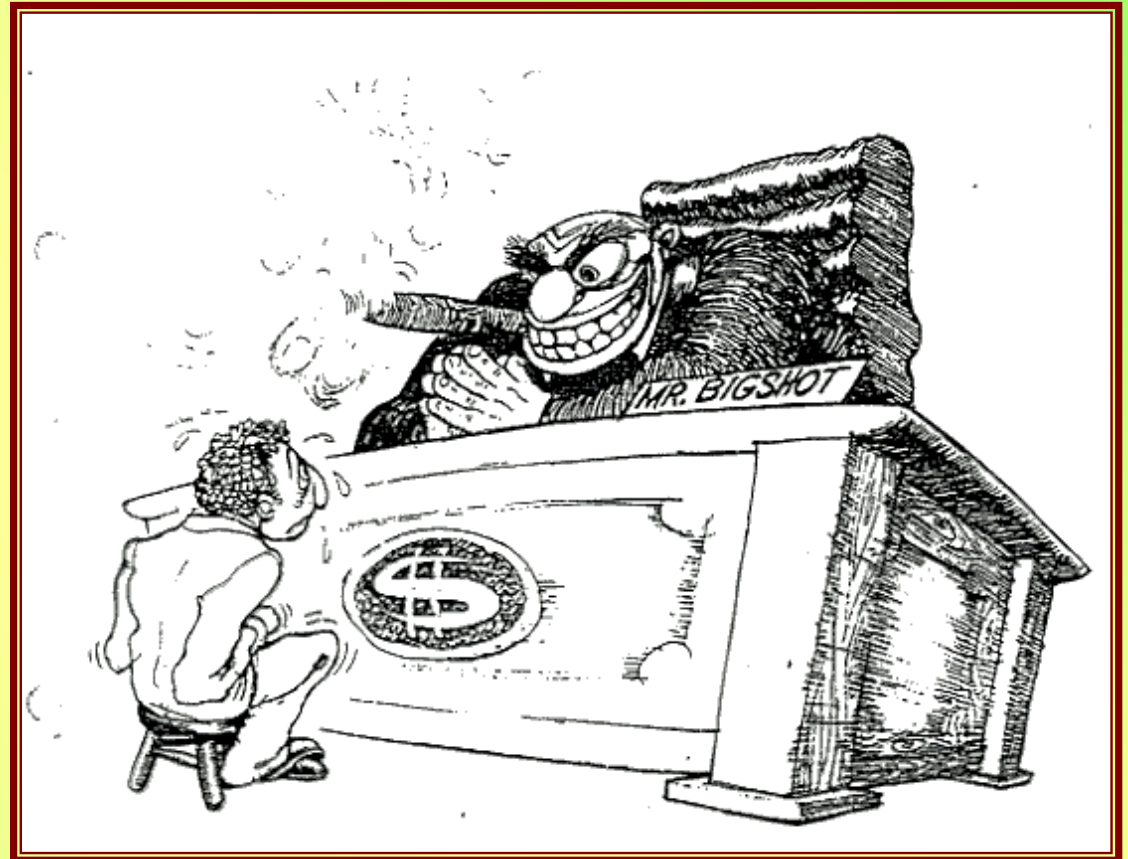


Challenges and Management

- Culture of working in a collaborative mode irrespective of size (big or small)

* Avoid
“ I know more..”
“ I am small..” syndrome

Outcome → TRUST



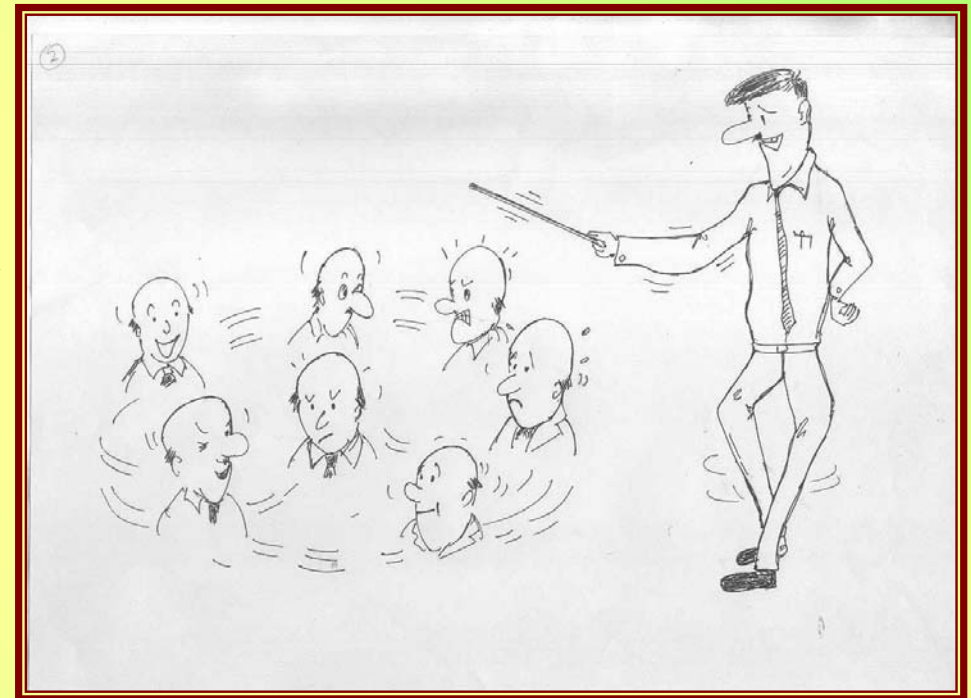
Challenges and Management

Culture of :

- * Ruthless execution
- * Patience and perseverance –
 - Expect delay with big pharma and Government.
 - Respect impatience of small companies.



helps in aligning expectations leading to mutual TRUST.



Challenges and Management

Incase of conflict do not ignore
but resolve fast:

- **Identify** least common denominator i.e. multiply aspirations of both the sides and not a mid-way / compromised solution.

By respecting your partners
needs, you are building TRUST.

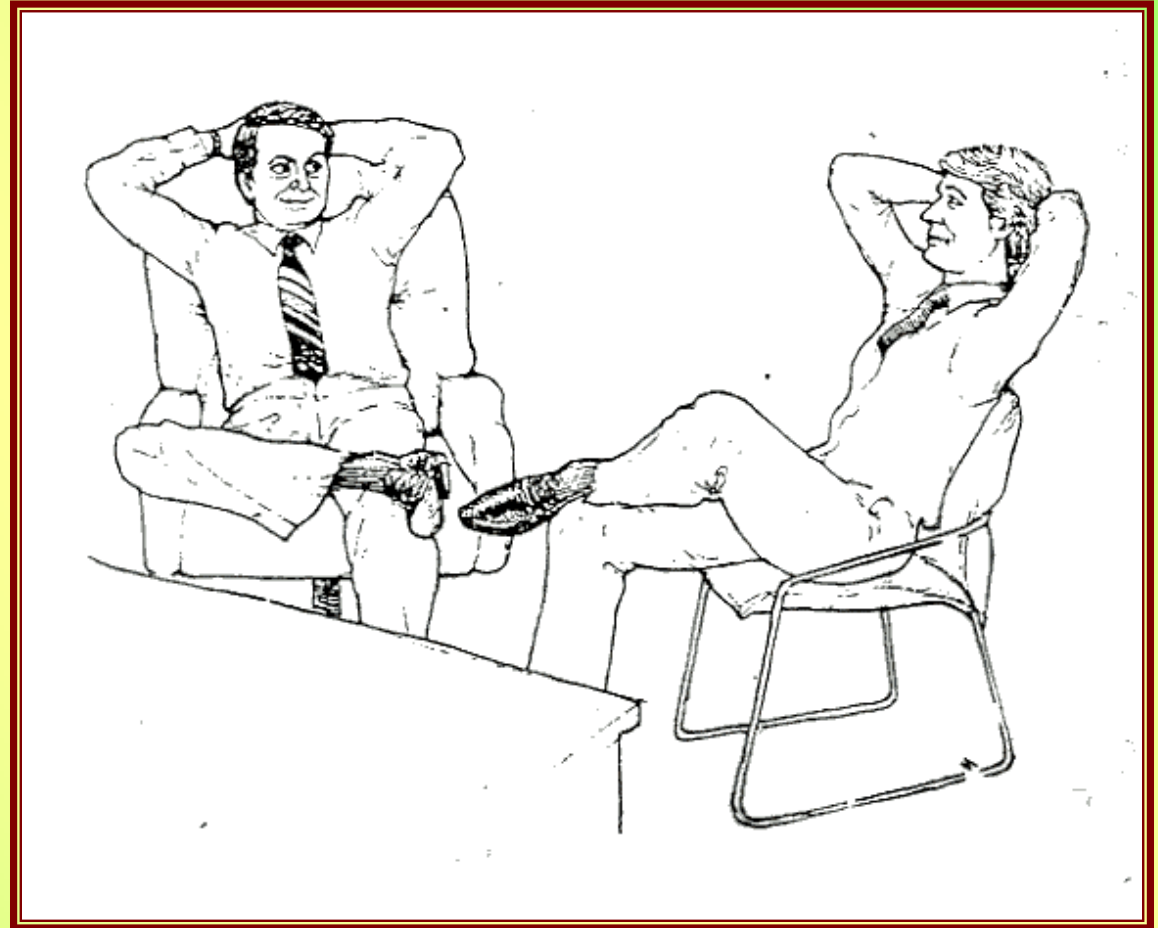


Challenges and Management

Mood Management:

- Internally and externally not only in good but in bad times too.
- Keep Communicating, even if there is no progress or bad news.

Essential ingredient of developing TRUST.



Challenges and Management

Celebrate at the first opportunity.

A strong motivation for team building leading to mutual TRUST.



Challenges and Management

Distance vs Direction

It is not merely the distance you travel in your collaboration but the right direction.

This ensures success and strengthens TRUST.



7 Secrets

1. Transparency through open communication.



2. Do not hide or suppress facts.



3. Execute ruthlessly but with aligned expectations.



4. Manage Conflicts early on.



7 Secrets (Contd...)

5. Keep communicating and manage mood not only in good but in bad times too.



6. Celebrate success at first opportunity.



7. Success lies being in the right direction and not in effort.



These 7 Secrets will build TRUST, and TRUST will lead successful collaboration.

Conclusion

- The future of biotech industry promises more partnerships for smaller biotechnology companies whose very existence is driven by innovative ideas.
- There are enough opportunities for big and small to grow together.
- Every collaboration is unique, one needs innovative ways of managing it successfully.
- Follow the great 7 secrets of collaborations and guarantee your success in the crystal ball.



Thank You

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