



Ferghana Partners Group Is a Life Sciences
Investment Banking House With Offices in
London and New York.

We Specialize in Creating and Executing
Effective Strategic Transactions for
Pharmaceutical, Chemical, Diagnostic and
Biotech Companies.

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“The Impact of Pharmaceutical and Biotechnology M&A on the Chemicals Industry”

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Managing Director



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A Key Background Point to Note:

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**Pharmaceutical and Biotechnology
Companies Outsource Many
Functions in Order to Concentrate on
Core Competencies**





Pharma/Biotech Outsourcing:

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The Principal Outsourcing Activities Are:

Gene Discovery

Functional Genomics

**High Throughput
Screening**

**Combinatorial
Chemistry, Biology
and Genetics**

Pre-Clinical

Clinical

Non-clinical

Distribution/Logistics

Manufacturing





Pharma/Biotech

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The Pharmaceutical/Biotech

Outsourcing Markets Are

Growing Substantially





Size of Pharma/Biotech Outsourcing Market (US\$B)

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	1996	1997	1998	1999	2000E
Preclinical/Discovery	1.0	1.1	1.2	1.3	1.4
Clinical (Phase 1-IV)	2.5	3.0	3.6	4.3	5.1
Manufacturing	15.7	16.8	18.0	19.3	20.7
Sales & Mktg	0.5	0.7	0.8	1.1	1.5
TOTAL *US only	22.3	24.9	27.8	31.0	34.5





Pharmaceutical/Biotechnology Companies Are Increasingly Outsourcing Discovery Chemistry

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Global Outsourcing of Combinatorial Chemistry:

1998	\$100m
1999	\$145m
2003E	\$235m

Source: In-house
Research/Analyst Reports



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Global Outsourcing of Chemical Manufacturing Activities (US\$B)

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	1996	1997	1998	1999	2000
Custom Synthesis	3.5	3.9	4.2	4.7	5.1
Intermediates	2.5	2.6	2.7	2.9	3.0
Bulk Actives	6.0	6.4	6.8	7.2	7.7
Dosage Form	3.5	3.8	4.0	4.3	4.7

Source: PAREXEL's
Pharmaceutical R&D Statistical
Sourcebook 1999

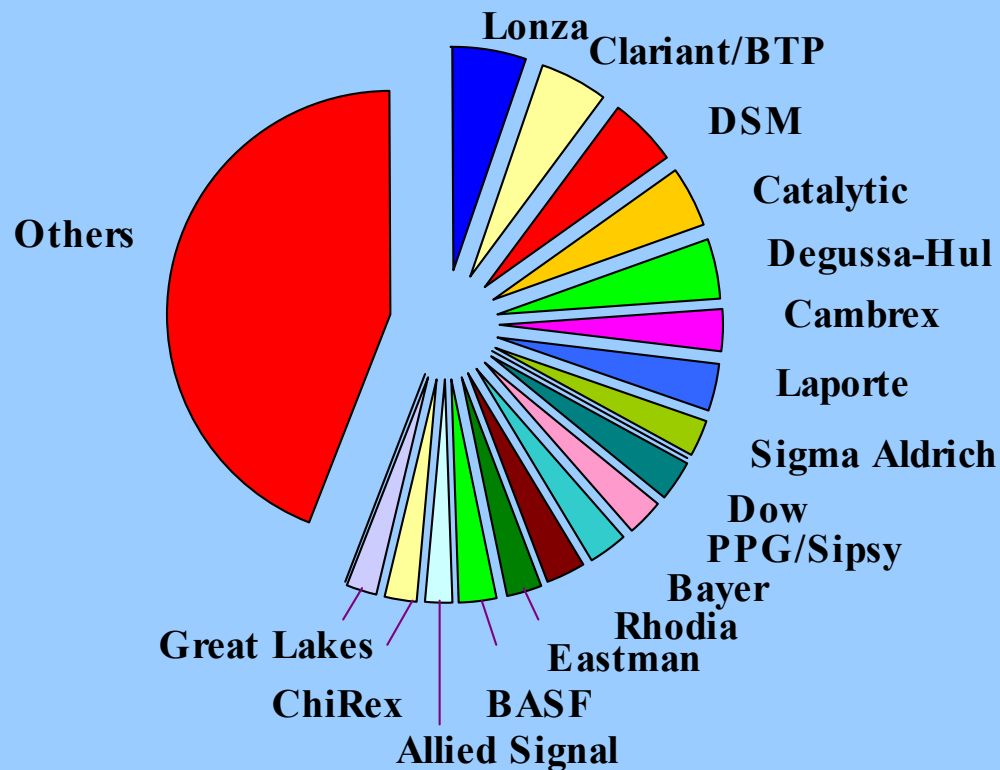


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Manufacturers of Pharmaceutical Intermediates – Estimated Market Share

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Source: Wood Mackenzie, Lonza
Company Documents, Deutsche
Banc Alex Brown Estimates



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**Has Consolidation in the
Pharmaceutical/
Biotechnology Industries Produced
More or Less Business
Opportunities for
Independent Manufacturers of
Pharmaceutical Intermediates?**





There Has Been Increasing Consolidation in Both the Biotech and Pharma Industries Over the Last Few Years and These Trends are Likely to Continue





Acquisitions and Valuations in the Pharmaceuticals Sector)

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\$ in millions	1996	1997	1998	1999
Number of Acquisitions	72	77	85	96
Number of Acquisitions with \$ Value Available	52	58	61	76
\$ Volume	38,547	23,577	78,868	131,320

Source: Windhover Strategic
Transactions Database



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Acquisitions and Valuations in the Biotechnology Sector

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\$ in millions	1996	1997	1998	1999
Number of Acquisitions	39	55	77	93
Number of Acquisitions with \$ Value Available	31	42	55	73
\$ Volume	2,705	2,232	6,852	17,461

Source: Windhover Strategic Transactions Database



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**Even at the Discovery Research Level,
There Have Been Considerable,
Consolidating Transactions**





Mergers, Alliances and Acquisitions in Combinatorial Chemistry – 1/3

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	Acquiring Company	Target
1994	Eli Lilly	Sphinx
1995	Glaxo Wellcome	Affymax
1995	Marion Merrill Dow	Selectide
1996	Phytera	Neptune Pharmaceuticals
1996	Trega	ChromaXome
1997	Chiroscience	Darwin
1997	Phytera	Auda Pharmaceuticals





Mergers, Alliances and Acquisitions in Combinatorial Chemistry – 2/3

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	Acquiring Company	Target
1997	PPD	SARCO & GSX
1997	Agouron	Alanex
1997	Tripos	Receptor Research (UK)
1998	Discovery Partners	ChemRX
1998	Discovery Partners	IRORI
1998	Pharmacopeia	MSI
1998	Trega	NaviCyte
1998	Oxford Molecular	Cambridge Combinatorial
1999	Warner-Lambert	Agouron





Mergers, Alliances and Acquisitions in Combinatorial Chemistry – 3/3

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	Acquiring Company	Target
1999	Albany Molecular Research	EnzyMed
1999	Technology Partners	DTL
1999	New Chemical Entities	Thetagen
1999	DuPont	CombiChem
2000	Discovery Partners	Discovery Technologies
2000	Discovery Partners	Axys Advanced Technologies





Further Downstream, There Have
Been a Large Number of
Acquisitions by Bigger
Chemical Companies of
Pharmaceutical Intermediates
Manufacturers





Mergers, Alliances and Acquisitions in Pharmaceutical Intermediates – 1/3

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	Acquiring Company	Target
1996	Allied Signal	Riedel de Hahn
1996	DSM	ChemieLinz(fine chems)
1996	Inspec	Shell Chemicals
1997	Catalytica	Glaxo Wellcome Site
1997	ChiRex	Glaxo Wellcome Site
1997	Ivax	Glaxo Wellcome Site
1997	PPG	Sipsy





Mergers, Alliances and Acquisitions in Pharmaceutical Intermediates – 2/3

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	Acquiring Company	Target
1998	DSM	Gist-Brocades
1998	Allied Signal	PFC
1998	BTP	Hexochimie SAS (BMS)
1998	Cambrex	Celgene (Chiral Int.)
1998	Cambrex	Verviers
1998	Laporte	Inspec
1998	Degussa	Huls
1999	Great Lakes	NSC Technologies





Mergers, Alliances and Acquisitions in Pharmaceutical Intermediates - 3/3

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	Acquiring Company	Target
1999	Ascot	ChiroTech
1999	Cambrex	Conti
1999	Cambrex	Irotech
1999	ChiRex	Cauldron
1999	Catalytica	Wyckoff
1999	Clariant	BTP
2000	Solutia	CarboGen Labs
2000	Solutia	Amcis





This Background Information on Outsourcing by
Pharma/Biotech Companies and on M&A Trends
Leaves This Audience and the Industry Participants
With Two Key Questions:

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- 1. Are the Suppliers of Various Chemistry Services Consolidating in Response to a Similar Trend in the Pharmaceutical/Biotechnology Sector?**
- 2. Do These Trends Mean More or Less Business for Chemistry Service Suppliers to the Pharma/Biotech Industries?**





Factors Increasing the Outsourcing of Pharmaceutical Ingredients and Combinatorial Chemistry:

1/3

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- **Advances in technology, such as genomics, will generate many thousands of new drug targets and even new therapeutic areas, thus requiring broad levels of support.**
- **The rise of the “Virtual” pharmaceutical company without its own manufacturing capacity or its own discovery research.**





Factors Increasing the Outsourcing of Pharmaceutical Ingredients and Combinatorial Chemistry:

2/3

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- **Complex-to-manufacture small molecules, peptides, proteins, enzymes and DNA fragments (such as Antisense drugs) necessitate specialist production units.**
- **The generics tidal wave – billions of dollars worth of drugs are due to come off-patent in the coming decade, creating a potential bonanza for generics manufacturers who may lack the requisite manufacturing infrastructure.**





Factors Increasing the Outsourcing of Pharmaceutical Ingredients and Combinatorial Chemistry:

3/3

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- **The creation, primarily by M&A transactions, of larger chemistry suppliers, who thereafter offer reassuringly greater financial stability, broader technology and wider geographic presence to Pharma/Biotech clients.**





Factors Inhibiting the Outsourcing of Pharmaceutical Ingredients and Combinatorial Chemistry:

1/3

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- **The tendency by Pharma/Biotech to keep their most significant products in-house, whenever possible.**
- **Whenever spare capacity arises, Pharma/Biotech companies will be tempted to utilise in-house facilities for compounds/drugs which otherwise would have been outsourced.**





Factors Inhibiting the Outsourcing of Pharmaceutical Ingredients and Combinatorial Chemistry:

2/3

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- **Because of the regulatory complexities and compliance that must extend from Pharma/Biotech outsourcers to contract manufacturers, Pharma/Biotech companies may think twice before outsourcing.**
- **The unpredictable nature of the Pharma/Biotech business, with its many failures of compounds, even at late clinical development stages, will impact the average duration of outsourcing contracts ... and perhaps the willingness of outside suppliers to take on this work.**





Factors Inhibiting the Outsourcing of Pharmaceutical Ingredients and Combinatorial Chemistry:

3/3

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- **Given the long lead times to achieve cGMP status for a facility, an early and durable commitment by the innovator is needed to underpin the creation, or modification, of the pharmaceutical intermediate manufacturer's production infrastructure ... else there might be an unacceptable transfer of capital risk.**

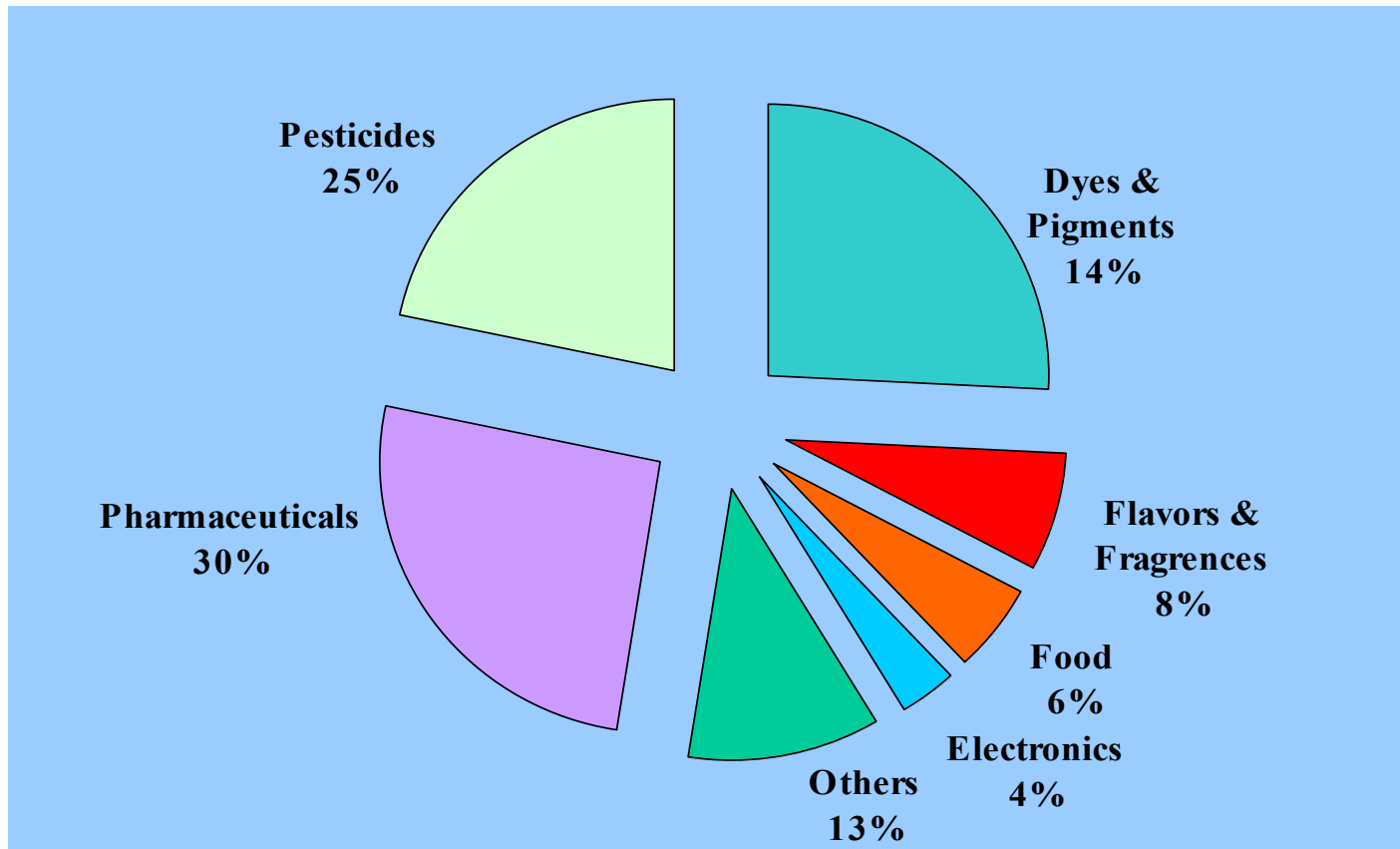




Fine Customers

Global Fine Chemical Sales: \$60 Billion*

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* 1998 estimate

Source: Julius Bar (Zurich)



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