William Blair & Company®

Equity Research

HEALTH CARE
Biotechnology

January 19, 2005
Research Note

Ticker: MEDX
Price: $8.98
52-week: ($4-$12)

Stock Rating:
Outperform

Company Profile:
Aggressive Growth

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Medarex, Inc.

Initiating Coverage With Outperform Rating

FINANCIAL SUMMARY			
Fiscal Year Ends:	December	Dividend/Yield:	$0.00/0.0%
Long-term EPS Growth Rate:	NA	Market Value (mil.):	$767

FISCAL YEAR	2003A	2004E	2005E
ESTIMATES			
Earnings Per Share	-$1.64	-$2.15	-$1.69
VALUATION			
Price/Earnings Ratio	NM	NM	NM

INVESTMENT THESIS

Therapeutic monoclonal antibodies (MAbs) represent a $9 billion market, growing 35 to 45% annually, by our estimation. Three of four biologics approved for therapies (true biotech drugs) in 2004 were MAbs. Those MAbs used for therapies are predominantly targeted at two large markets—cancer and autoimmune disease (e.g., rheumatoid arthritis, multiple sclerosis)—with other markets including infectious disease, transplantation, and cardiovascular disease.

We view Medarex as the "best of breed" human (fourth-generation) antibody company. Human antibody technology has been pursued of a number of reasons. Nonhuman antibodies (murine—mouse or chimeric) often cause human (neutralizing) immune responses, as seen in the FDA labels. "Humanization" of native mouse antibodies also takes time and increases costs due to both development costs and license fees. Human antibodies can be created de novo either through a (phage-display) catalog of antibodies derived from human samples or from mice that have been genetically altered to produce human rather than mouse antibodies. We believe that to create human antibodies from phage display—that can function as therapies—often requires protein engineering to increase the antibodies affinity, and this engineering not only adds time and cost, but also can engender an unintended (neutralizing) immune response. While other approaches exist to create human antibodies from mice, we see the KM-mouse from Medarex as a technology that can provide the necessary functional diversity by producing the entire range of antibodies (e.g., various Ig forms and subtypes). Moreover, Medarex has brought in other technologies for faster validation ("trans-phage" in combination with Biosite [BSTE $61.63]), improved production yields (up to 200%) using transcription factors (ZFPs from Sangamo [SGMO $5.37]) and better, desired host immune response (Potelligent platform from BioWa). We believe that the recent, significant deals with Bristol-Myers Squibb (BMY $24.43), Pfizer (PFE $25.30), and MedImmune (MEDI $24.41)—which included total upfront payments of $175 million—help validate many of these points.

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We believe that Medarex has a full and progressing pipeline. The company, along with its new partner Bristol-Myers Squibb, intends to begin a phase III trial of MDX-010 for metastatic melanoma. There is a special protocol assessment (SPA) for the trial, and the antibody is fast tracked as well. Moreover, there are two antibodies in late stage (IIb or greater) by J&J/Centocor, one of which is a potential follow-on for Remicade. Medarex has 8 antibodies in phase II or I/II—3 of its own and 5 though Genmab (including 1 pursued by Amgen), and 10 antibodies in phase I. While we understand that the company is targeting a sustainable three new investigational new drug applications with the FDA (INDs) per year, we foresee about double that number in 2005.

By our estimation, Medarex has sufficient cash. While the company will continue to burn cash for at least the next few years, we estimate that it has cash of approximately $420 million--over three years by our estimate at current burn rate.

We estimate that the valuation does not reflect recent commercial developments nor the pipeline's potential. Since achieving its recent stock price highs—which we view as driven by the deals with Bristol-Myers Squibb, Pfizer, and MedImmune—the price for Medarex stock has pulled back. Based on our model to value therapeutic MAbs (see our Industry Report, "Valuing Therapeutic Antibodies," of February 27, 2003), the company's value seems to be well in excess of its current market capitalization and substantially increased since our 2003 Industry Report. Moreover, Medarex appears to be valued comparably to the other developmental antibody platform companies, despite what we believe is a better platform and robust pipeline.

ESTIMATES

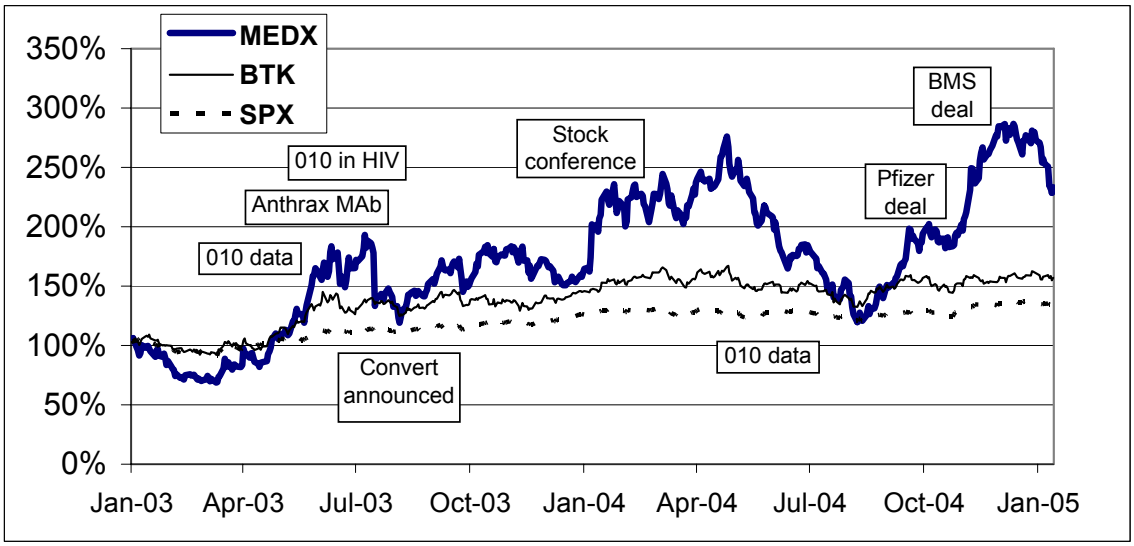
	Revenue millions	EPS
2004E	$ 11.0	$ (2.15)
2005E	$ 20.7	$ (1.69)
2006E	$ 28.9	$ (1.62)
2007E	$ 85.4	$ (1.19)
2008E	$ 285.6	$ 0.17

STOCK THOUGHTS

While we rate Medarex Outperform, we want to note a few other stock thoughts.

1. We believe that the broader biotech market strength may be most important, at least in to take advantage of upside news and mitigate downside news (see Risks).
2. There has been a round trip to post-Pfizer price, so Bristol-Meyers Squibb and MedImmune deals (or all three) may no longer be fully reflected. This may also in part reflect the dilution from the recent conversion of one the two converts, although as we discuss elsewhere, we still see substantial upside from the intrinsic value of the pipeline.
3. Lastly, we see the product (clinical) development milestones driving the stock (as long as the broader biotech market holds up). To that end, we expect six new INDs in 2005 (four of its own, two partners). These may well potentially include MDX-1100 (anti-IP 10 for autoimmune disease) and the two antibodies recently licensed to MedImmune, MDX-1103 (anti-Interferon) and MDX-1333 (anti-Interferon receptor) for Lupus and also other immune disease. We also expect clinical data regarding 070 (anti-PSMA for prostate cancer), 066 (anti-Toxin A for C. difficile), 214 (anti-EGFR plus CD-89 for cancers), 018 (an undisclosed Genmab antibody for inflammation), and possibly HIV data for the 010 (anti-CTLA-4 for sustaining an immune response). We also expect progress on the clinical program for 060 (anti-CD-30 for Hodgkin's disease). Lastly and given the recent success, we would expect to see other corporate partners

Normalized Returns



Source: Reuters; William Blair & Company, L.L.C. estimates

RISKS AND WARNING SIGNS

Clinical news flow. Like other biotech and pharmaceutical firms. Medarex relies on testing its potential MAb therapies in human clinical trials. While the science and medicine may be understood, the actual effects (and safety) of a given therapy still have a level of uncertainty, and this can only be tested with clinical trials. We estimate that antibodies entering the clinic may have a 20 to 40% chance of clinical success, and believe that investors should take these probabilities into account when determining valuations and investment risk level.

Regulatory news flow. As can be seen by recent events involving the FDA, the regulatory process can be unpredictable. For the time being, the FDA publicly still espouses a rationale view of trying to decrease approval times and fast-track drugs when appropriate, but recent safety concerns could change this. We believe this is also true in Europe, Japan, and the rest of the world. In any case, while there are guidelines for time to review applications, these times can slip and in our view regulatory agencies can take a differing view from a company regarding data from clinical trials.

Biotech index movement. We estimate that for developmental biotech firms (and sometimes even for large, profitable biotechs) that the strength or weakness of the broader biotech universe can have large effect on company stock performance. Specifically, we estimate that Medarex has a daily beta of about 1 1/3 compared to the BTK index and a daily beta of about 2 compared to the S&P 500. Consequently, we estimate that market moves could have a greater impact in some circumstances than company performance.

Cash balance and cash burn. As we stated in our investment thesis, we estimate that Medarex has more than three years' worth of cash at current burn rates. However, as the company increases its clinical trial activities, R&D expenses could greatly accelerate the burn rate if those expenses are not offset of incremental revenues from collaborations (short term) or if product approvals are delayed or denied (mid to long term).

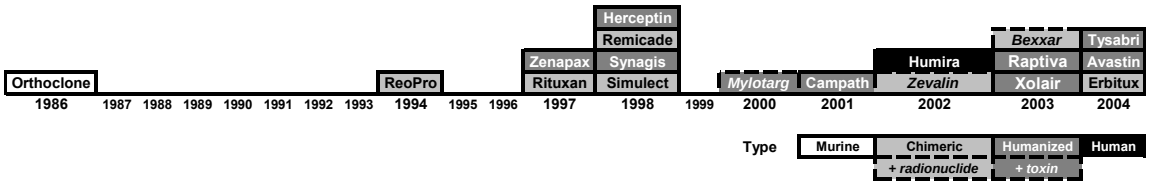
Intellectual property. For biotech firms, patents are important to maintain some level of exclusivity, and therefore pricing power and ability to gain share. While we believe that for any given antibody, Medarex should be able to get a long-lived composition of matter patent, the company's business model is also dependent on its underlying HuMAbs and KM mice platforms. To that end, we note that the company has cross-licensed of HuMAb technology with Abgenix, Cell Genesys, Xenotech, and

Japan Tobacco. Moreover, it has cross-licensed the KM mouse with Kirin Brewery, and its own platform patents begin expiring in 2011. Lastly, we should also note that commercial production of antibodies face a number of production patents (e.g., Cabilly patent from Genentech and a phage-display patent estate across a number of firms). We believe that in many cases, access to these patents is possible through licenses, although that would affect the gross margin, and it may be more difficult to gain access to new manufacturing technologies.

THERAPEUTIC MONOCLONAL ANTIBODIES (MAbs) REPRESENT A $ 9 BILLION MARKET, GROWING 35% TO 45% ANNUALLY

As stated above, three of four biologics approved for therapies (true biotech drugs) in 2004 were MAbs. These included Avastin, Erbitux, and Tysabri. This was the second year for three MAb approvals and the fifth year in a row with at least one MAb approved.

Timeline of Therapeutic Antibodies Approved by FDA



Source: Company reports; FDA; and William Blair & Company, L.L.C. estimates

Commercial antibodies have targeted predominantly cancer and autoimmune disease, with a number of billion dollar blockbusters including Rituxan/MabThera ($2.7 billion worldwide [WW] last-12-months [LTM] sales), Remicade ($2 billion), and Herceptin ($1 billion). Relatively new antibodies have quickly achieved significant revenues, including Humira ($852 million WW LTM sales) and Avastin ($555 million).

Monoclonal Antibodies Approved by FDA

Approval Date	Trade Name	Generic Name	Indication	Target	Sponsor Company	Licensee	Type of mAb	Ab Isotype
2004	Tysabri	natalizumab	Multiple Sclerosis	α4-integrin	Biogen Idec / Elan	Protein Design Labs	Humanized	*IgG4*
2004	Avastin	bevacizumab	Metastatic Colorectal Cancer	VEGF	Genentech / Roche	Protein Design Labs	Humanized	IgG1
2004	Erbitux	cetuximab	Metastatic Colorectal Cancer	EGFR (HER1 / c-ErbB-1)	Imclone / BMS / Merck KGaA	UC San Diego / Sanofi Aventis	Chimeric	IgG1
2003	Xolair	omalizumab	Asthma	IgE	Genentech / Novartis	Tanox / Protein Design Labs	Humanized	IgG1
2003	Raptiva	efalizumab	Psoriasis	CD11a on T-cells	Genentech / Serono	Xoma / Protein Design Labs	Humanized	IgG1
2002	Humira	adalimumab	Rheumatoid Arthritis	TNF-α	Abbott	Cambridge Antibody	Human	IgG1
2001	Campath	alemtuzumab	Cancer, Leukemia, MS	CD52 on B, T and NK cells	Ilex / Schering	British Technology Group (BTG)	Humanized	IgG1
1998	Simulect	basiliximab	Immuno-suppressant	CD25 (IL-2Ra) on activated lymphocytes	Novartis	Ligand (Seragen)	Chimeric	IgG1
1998	Synagis	palivizumab	Anti-infective	F protein on respiratory syncytial virus	MedImmune	Protein Design Labs	Humanized	IgG1
1998	Remicade	infliximab	Rheumatoid Arthritis	TNF-a	J&J /Schering-Plough	GTC Biotherapeutics	Chimeric	IgG1
1998	Herceptin	trastuzumab	Breast Cancer	HER2	Genentech / Roche	Protein Design Labs	Humanized	IgG1
1997	Rituxan	rituximab	NHL	CD20 on B cells	Genentech / Roche / IDEC	IDEC	Chimeric	IgG1
1997	Zenapax	daclizumab	Immuno-suppressant, MS, Cancer	CD25 (IL-2Ra, Tac) on activated lymphocytes	Roche	Protein Design Labs	Humanized	IgG1
1994	ReoPro	abciximab	Anri-thrombotic	GP IIb and IIIa on activated lymphocytes	J&J/Lilly	SUNY at Stony Brook	Chimeric	IgG1 Fab
1986	Orthoclone OKT3	muronomab	Immuno-suppressant	CD3 antigen on T cells	J&J	Ortho Biotech	Murine	IgG2a

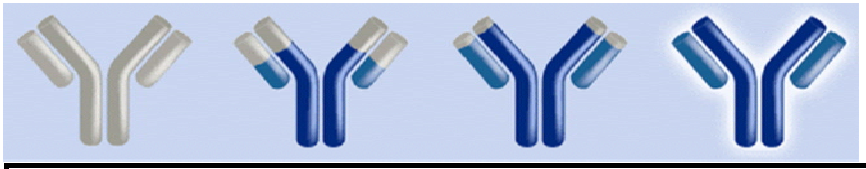
Excludes toxin- or radioisotope-linked and polyclonal

Source: Company reports and William Blair & Company, L.L.C. estimates

MEDAREX TECHNOLOGY "BEST OF BREED"

As discuss above, we view the Medarex technology as best of breed for creating human monoclonal antibodies for therapeutics. In our opinion, human antibodies from Medarex should in general: be faster; be cheaper; not cause a (neutralizing) immune response; be high-affinity (using the natural affinity maturation process of the mouse); and be more effective across more diseases.

Major Therapeutic Monoclonal Antibody Platforms

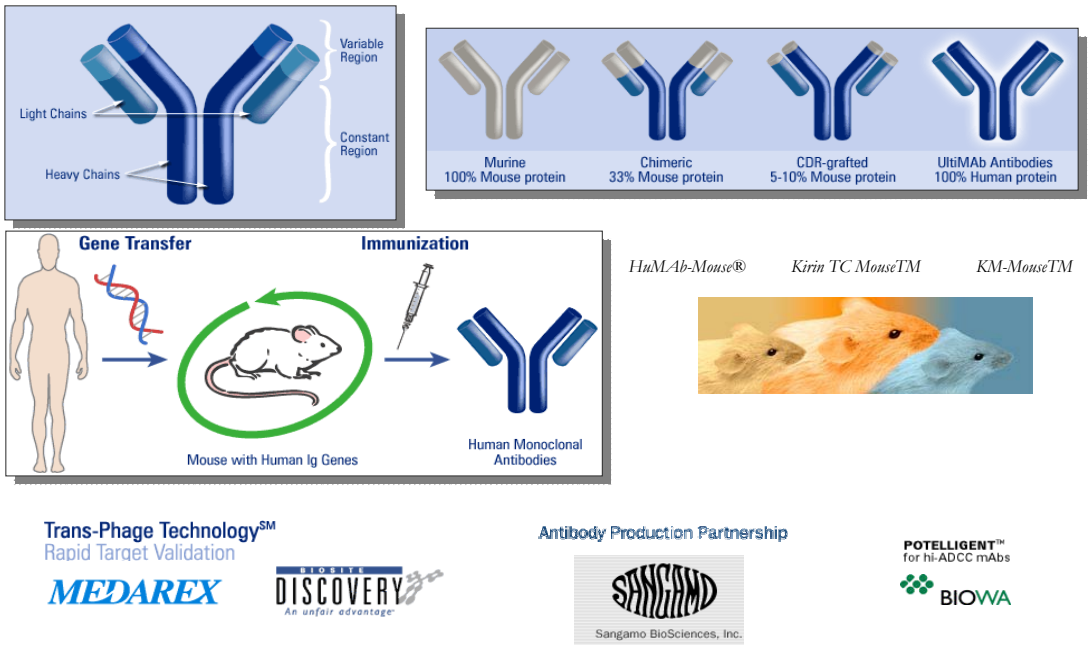


	Murine	Chimeric	Humanized		Fully Human	
	100% Mouse	*66% Human*	*90%-95% Human*		*100% Human*	
FDA Approved:	**1**	**5**	**8**		**1**	
Platforms:			SMART Technology	Directed Evolution	Transgenic Mouse Models	Phage Display
Companies			**PDLI**	**AMEV (LLY)**	**ABGX, MEDX**	**CATG, MOR**

Source: Nature Biotechnology; MEDX, PDLI, ABGX, CATG reports; Pharmaprojects; and William Blair & Company, L.L.C. estimates

The KM-mouse strain which produces the UltiMAb antibodies was derived from crossbreeding the original HuMAb mouse from Medarex with a Kirin TC mouse. The HuMAb mouse is transgenic with the mouse antibodies genes inactivated and replaced by human genes encoding for *heavy and light* chains certain antibodies. The Kirin TC mice are "transchromosomic" having the mouse genes inactivated and replaced by the human chromosomes containing all of the human antibody genes—including all *heavy* chain classes that encode *all isotypes* (IgG1-4, IgA1-2, IgD, IgM, and IgE). The crossbred KM-mouse retains the capability to produce all human antibody isotypes plus produces an immune response generating high-affinity antibodies, obviating the need in our opinion for downstream protein engineering.

Medarex Technology Platform



Source: Various companies' documents; William Blair & Company, L.L.C. analysis

Also as we discuss above, Medarex partnered to bring additional technologies within its platform. For example, in June 2002 they formed an eight-year collaboration with Biosite to add Biosite's phage-display (essentially using viruses within bacteria to produce antibody parts on the bacterial surface—"displaying" them) capabilities to more rapidly screen antibodies and potentially validate targets faster. Medarex has also successfully worked with Sangamo to engineer cell lines that can produce antibodies in quantities 200% greater.

Lastly, Medarex has been working with BioWa's low fucose (a sugar on the Fc or tail portion of antibodies) technology to improve the capabilities of its antibodies to bind to certain immune receptors in order to improve efficacy. We believe that this additional capability dovetails well with the KM-mouse's ability to produce all the various isotype of antibodies, some of which interact differently with a patient's own immune system. Combining these approaches should allow Medarex to better optimize various antibody characteristics including, epitope binding, affinity, ADCC, CDC internalization, growth inhibition, and phagocytosis.

Antibody Groups and Sub-groups

					Effector Function								
	Proportion	Half life	Susceptibility to proteolytic enzymes	ADCC	FcγRI (CD64)	FcγRII (CD32)	FcγRIII (CD16)	FcαRI (CD89)	FcεRI	FcεRII (CD23)	CDC	Complement Activation	Comments
IgG1	43%	23 days	++	+	+++	+	+	-	-	-	+	++	
IgG2	23%	23	+/-	0	-	+/-	-	-	-	-	--	+	
IgG3	3%	7	+++	+	+++	++	+	-	-	-	++	+++	
IgG4	4%	23	+	-	++	-	-	-	-	-	---	-	for autoimmune
IgA1	18%	7			-	-	-	++	-	-		Yes (mannan-binding lectin)	Secreted
IgA2		7			-	-	-	++	-	-			
IgM	9%	7			-	-	-	-	-	-		Yes (classical)	
IgD	0.1%				-	-	-	-	-	-		No	
IgE	0.003%				-	-	-	-	++++	+		No	Allergy

Source: ASH; Nature Review Immunology; William Blair & Company, L.L.C. estimates

Immune Effector Cell Receptors

	IgG							*IgA*	*IgE*		
	FcγRI (CD64)	FcγRII (CD32) a		b	c	FcγRIII (CD16)		FcαRI (CD89)	FcεRI	FcεRII (CD23)	
		HR	LR			a	b			a	b
Monocytes	√	√	√	√	√	√ (some)		√			√
Monocytes (activated)									√		
Macrophages	√	√	√	√	√	√		√ (some)			√
Neutrophils		√	√		√			√			
Neutrophils (IFN-γ stimulated)	√						√				
B cells				√	√					√	√
Eosinophils								√			√
Eosinophils (INF-γ stimulated)	√						√				
Langerhans cells		√	√						√		
Platelets		√	√								
T cells						√ (γδ)					√
Basophils									√		
Dendritic cells								√ (some)			
Kupffer cells								√			
Mast cells									√		
Natural Killer (NK) cells						√					

Source: ASH; Nature Review Immunology; William Blair & Company, L.L.C. estimates

As we said in our investment thesis, we believe that the three recent deals into which Medarex entered further validate the technology.

Bristol Myers Squibb Deal (11/7/04): MDX-010—Global for All Indications

MDX-010—an anti-CTLA-4 antibody (antagonist)—appears to enhance a patient's immunity by blocking CTLA-4 which turns down or off stimulated T-cells (a negative feedback loop). It seems to be potentially useful in various cancers, such as Melanoma, Prostate and Breast, as well as potentially in HIV. Metastatic melanoma is first indication for which approval is being pursued.

- Deal structure beneficial to Medarex
  - BMS paid $50 million upfront
    - One-half by purchasing of common stock
    - Nearly the 35% Medarex share of development budget
  - Up to $480 million in milestone payments

    - $205 million regulatory
        - Multiple indications
    - $275 million sales-based
  - Co-promotion opportunity for Medarex in U.S.
    - BMS help train reps
    - Profit and copromotion share 45%
    - Else “substantial” royalties
  - Royalties possible outside U.S.
- Combined patent estate
- Governed by joint Medarex/BMS steering committee
  - $192 million budget
  - Split 65% BMS and 35% Medarex
  - Examples
    - Combined Europe and U.S. development: 65% BMS and 35% Medarex
    - U.S. development: 50% BMS and 50% Medarex
    - ROW development: 100% BMS
- BMS also has own CTLA-4 ligand program
  - Turns down (rather than up) immune system (CTLA-4 agonist)
  - Abatacept
    - Pilot 1 NDA for rheumatoid arthritis
    - Should be finalized 1Q05
    - Fusion protein of CTLA-4 and Fc portion of IgG
  - LEA29Y
    - Fully accrued Phase II to prevent solid organ transplant rejection
    - Fusion protein

Melanoma—Cancer in the Cells that Color the Skin (melanocytes)

- Three types of skin cancer: melanoma, basal cell and squamous cell
  - Melanoma is the most serious type of skin cancer
  - Melanoma is more aggressive than basal cell skin cancer or squamous cell
  - More than 53,600 people get are diagnosed annually in the U.S.
- Staging
  - Stage III
    - Tumor may be any thickness, with or without ulceration
    - Spread into the nearby lymph system
    - May involve satellite tumors (within 2 centimeters of the original tumor)
  - Stage IV
    - Same as III, but has spread to other parts of the body
- Treatment
  - Surgery
  - Biologics (interferon-α and interleukin-2)
  - Chemotherapy
    - Adjuvant chemotherapy does not appear to improve survival
    - Response to dacarbazine (DTIC), the nitrosourea carmustine (BCNU), cisplatin, and tamoxifen
  - Radiation (may provide symptomatic relief for metastases to brain, bones, and viscera)

Source: NCI; ASCO; William Blair & Company, L.L.C. estimates

Future MDX-010 Milestones

- MDX-010 in HLA-A2+ Stage III or IV Metastatic Melanoma (MM)
  - Phase III (Pivotal) complete **1H06** and data for (**2H06**)
  - Filing (**1H07**)
  - FDA action (**2H07-1H08**)
  - Special Protocol Assessment (SPA) (8/04)
  - Fast track status (10/04)
- MDX-010 Additional MM Trials
- MDX-010 in Other Tumors—Ongoing Trials
  - Phase II
    - Prostate Cancer
    - Breast Cancer
    - Renal Cell Cancer (NCI)
  - Phase I / II
    - Melanoma Combination with IL-2 (NCI)
    - Acute Myeloid Leukemia (NCI / CTEP)
    - Non-Hodgkin's Lymphoma ((NCI / CTEP)

Source: Company reports and interviews; William Blair & Company, L.L.C. estimates

Pfizer Deal (9/15/04): Major Preclinical—50 MAbs over 10 Years

- 10-year against 50 MAbs/disease targets picked by Pfizer
  - Each target may generate over $8 million average ($400 million total) milestones and licensing fees
  - For commercialized antibodies--we estimate that Pfizer would pay a royalty between 3%-5%
  - Once the mice are transferred to Pfizer from Medarex, Pfizer will pay all the development costs and retain all the commercial rights ("cash and carry")
- Pfizer paid $110 million total upfront
  - $80 million for a broad licensing fees
  - $30 million for Medarex stock at a modest average premium to its previous price ($6.21 for 4,827,808 shares)
- Cross-licensed intellectual property anti-CTLA-4
  - Pfizer would need to pay Medarex milestones and royalties if it commercialized a product.
  - In contrast, Medarex received its license with no further financial obligations
  - CP-675,206 (Abgenix CTLA4 mAb)
    - Entered Phase II May 2004 for metastatic melanoma
    - Randomized, open label enrolling 83 patients to study 2 regimens
    - Stage III unresectable melanoma or Stage IV

MedImmune Deal (11/23/04): Anti-Interferon for Autoimmune (Lupus)

- Lupus is first indication
- Two (preclinical) antibodies
  - MDX-1103 (anti-Interferon)
  - MDX-1333 (anti-Interferon receptor)
- $15 million upfront
- Medarex responsible for development up to pivotal trials

  - If profit sharing not selected, the MedImmune fully pays remaining development costs
- Pre-clinical: IND within 18 months
- Can elect at end of Phase II to profit share for either product
  - Pay proportional share of future and past (with interest) development
- Can further elect to copromote in the United States

WE BELIEVE THAT MEDAREX HAS A FULL AND PROGRESSING PIPELINE

In addition to the products mentioned as part of the recent deals, Medarex is building its pipeline using three approaches: 1) its own discover and clinical development; 2) joint development or product collaborations, for example 50:50 partnerships; and 3) cash and carry—UltiMAb licenses—which typically include upfront payments, milestones and royalties. This has led to a clinical pipeline of 21 candidates across all phases of human clinical trials.

Medarex Clinical Pipeline

	Phase	Trade Name	Indication	Target	Collaborator	Type
1	**III**	**MDX-010**	**Metastatic Melanoma**	**CTLA-4**	**Bristol-Myers Squibb**	**Co-promote / profit share**
2	IIB	CNTO-148	Inflammation	TNF-α	Centocor (J&J)	Cash & carry
	IIB	CNTO-1275	Inflammation	IL-12	Centocor (J&J)	Cash & carry
4	**II**	**MDX-060**	**Hodgkin's Disease**	**CD-30**	**None**	
	II	**MDX-070**	**Prostate Cancer**	**PSMA**	**None**	
	II	HuMax-CD4	Lymphoma	CD-4	Genmab	Equity
	II	AMG 714	Rheumatoid Arthritis	IL-15	Amgen via Genmab	Equity
4	**I/II**	**MDX-214**	**Cancer**	**EGFR + CD-89**	**None**	
	I/II	**MDX-018**	**Inflammation**	**Undisclosed**	**Genmab**	**60:40**
	I/II	HuMax-EGFR	Hand & Neck Cancer	EGFR + CD-89	Genmab	Equity
	I/II	HuMax-CD20	Non-Hodgkin's Lymphoma	CD-20	Genmab	Equity
10	**I**	**MDX -066**	**C. difficile**	**Toxin A**	**MBL**	**50:50**
	I	CNTO-95	Anti-angiogenesis	Integrins	Centocor (J&J)	Cash & carry
	I	NVS #1	Autoimmune	Undisclosed	Novartis	Cash & carry
	I	NVS #2	Autoimmune	Undisclosed	Novartis	Cash & carry
	I	AMGN #1	Undisclosed	Undisclosed	Amgen	Cash & carry
	I	AMGN #2	Undisclosed	Undisclosed	Amgen	Cash & carry
	I	FG-3019	Idiopathic Pulmonary Fibrosis	CTGF	Fibrogen	Cash & carry
	I	LLY #1	Undisclosed	Undisclosed	Lilly	Cash & carry
	I	MDX-1307	Cancer	vaccine	Celldex	Equity
	I	HGS-TR2J	Solid Tumors	TRAIL-R2	HGSI via Kirin	Royalties
3	**Pre-clinical**	**MDX-1333**	**Lupus**	**Interferon-α**	**MedImmune**	**Co-promote / profit share**
	Pre-clinical	**MDX-1103**	**Lupus**	**Interferon-αR**	**MedImmune**	**Co-promote / profit share**
	Pre-clinical	**MDX-1100**	**Inflammation**	**IP-10**	**None**	
24						

Source: Company reports and William Blair & Company, L.L.C. estimates

VALUATION CONSIDERATIONS

One can try to determine the intrinsic value antibody companies as we have previously (see “Valuing Therapeutic Antibodies” Industry Report of 2/27/03) or look to relative valuations. Regarding the first approach, compared with our 2003 valuation of Medarex, value appears to have increased by over $1 billion from about $600 million to more than $1.7 billion (adjusted for the terms of the recent deals). Moreover, as we noted above stock price seems to have retrenched since its peak after signing the three significant recent deals. Lastly, Medarex appears to be priced comparably to the other antibody platform companies, although we prefer its platform and pipeline.

Adjustments to Antibody Valuation Model

	Beginning 2003	Beginning 2005
Preclinical	21	63
Phase I	3	10
Phase I/II	Unavailable	4
Phase II	4	4
Phase IIb	Unavailable	2
Phase III	0	1
Launched	0	0
Total	28	84

		Pre-3 deals adjustments
Portfolio NPV	$ 1,278,778	$ 2,896,320
Cost NPV	$ 1,018,000	$ 1,515,830
Cash	$ 370,000	$ 245,000
Value	$ 630,778	$ 1,625,490

		Adjustments
PFE	Adjusted Cash	$ 10,000
	NPV Milestones	$ (55,673)
	NPV Royalties	$ (66,493)
BMS	Adjusted Cash	$ 35,000
	NPV Milestones	$ 215,000
	NPV Royalties	Unavailable
MedImmune	Adjusted Cash	$ 11,000
	NPV Milestones	$ (4,772)
	NPV Royalties	Unavailable
	Adjusted value	$ 1,769,552

Source: Pharmaprojects; McKInsey & Company; Company financials, presentations and interview; William Blair & Company, L.L.C. estimates

($ in millions)

Company	Ticker	Blair Rating	Close 1/13/2005	% of Yr. High	Year High	Year Low	Shares Outst.	Market Cap.	Cash	LT Debt	Net LT Debt	2005E Revenue	LTM R&D	Market Cap. to: Cash	2005E Rev	LTM R&D
Protein Design Labs	PDLI		$19.34	70%	$27.58	$14.62	95.5	$1,847	$420	$258	($162)	$125	$165	4.4	14.8	11.2
Medarex	MEDX	O	$9.03	78%	$11.55	$4.37	107.5	$971	$420	$150	($270)	$20	$124	2.3	48.6	7.9
Abgenix	ABGX		$9.19	47%	$19.50	$7.75	89.1	$819	$231	$250	$19	$20	$126	3.5	40.9	6.5
Cambridge Antibody (ADR)	CATG		$13.05	88%	$14.75	$7.99	41.1	$536	$198	$44	($155)	NM	$83	2.7	NM	6.5
Mean								$1,043	$317	$175		$55	$124	3.2	31.5	7.6
Median								$895	$325	$200		$20	$125	3.1	38.6	6.5

Source: Factset, First Call, Company reports, and William Blair & Company, L.L.C.

William Blair & Company, L.L.C. is a market maker in the security of this company and may have a long or short position.

Additional information is available upon request.

Current Rating Distribution (as of 12/31/04)

Coverage Universe	Percent	Inv. Banking Relationships*	Percent
Outperform (Buy)	58	Outperform (Buy)	8
Market Perform (Hold)	36	Market Perform (Hold)	5
Underperform (Sell)	6	Underperform (Sell)	1

*Percentage of companies in each rating category that are investment banking clients, defined as companies for which William Blair has received compensation for investment banking services within the past 12 months.

Winton Gibbons attests that 1) all of the views expressed in this research report accurately reflect his/her personal views about any and all of the securities and companies covered by this report, and 2) no part of his/her compensation was, is, or will be related, directly or indirectly, to the specific recommendations or views expressed by him/her in this report.

Stock Rating: William Blair & Company, L.L.C. uses a three-point system to rate stocks. Individual ratings reflect the expected performance of the stock relative to the broader market over the next 12 months. The assessment of expected performance is a function of near-term company fundamentals, industry outlook, confidence in earnings estimates, valuation, and other factors. Outperform (O) – stock expected to outperform the broader market over the next 12 months; Market Perform (M) – stock expected to perform approximately in line with the broader market over the next 12 months; Underperform (U) – stock expected to underperform the broader market over the next 12 months; Not Rated (NR) – the stock is currently not rated.

Prior to September 3, 2002, William Blair & Company, L.L.C. used a four-point numerical system to rate stocks. Investment ratings reflect the expected performance of the stock relative to the market over the next 12 to 18 months: 1 – Strong Buy (Significant Outperformance); 2 – Long-term Buy (Outperformance); 3 – Hold (Market Average Performance); 4 – Sell (Underperformance).

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