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Liana Moussatos, Ph.D. (415) 263-6626 **Kelechi Chikere, Ph.D. (415) 273-7304**

Vitae Pharmaceuticals (VTAE - OUTPERFORM): BI Terminates Partnership: VTAE Could Take Alzheimer's Program Through Phase 1 and Re-Partner; Reiterate OUTPERFORM and $20 PT.

Price: $9.89 **12-Month Price Target: $20**

- **Vitae announced today that Boehringer Ingelheim (BI) has decided to end the BACE / Alzheimer program and the partnership for business reasons.** Vitae and BI were slated to begin clinical testing of its BACE inhibitor VTP-36951 by year-end 2015. It is our understanding that the termination of the agreement has nothing to do with the compound itself and was based solely on strategic business reasons by BI's upper management. To our knowledge, BI has no other Alzheimer's program ongoing. While BI and Vitae conduct the transfer of rights for VTP-36951, we anticipate Vitae is likely to decide whether to conduct a Phase 1 trial in the coming months. We currently project that the cost associated with running a Phase 1 study is in the $1-5 million range, and believe this cost to be manageable with Vitae's cash balance (ended Q1:15 with $88.7MM). Therefore, since there is apparently no new issues with VTP-36951 and preclinically was found to be potent at lowering amyloid-β, we believe Vitae is likely to conduct a Phase 1 trial, given that positive data could attract another partner and a lucrative deal.

- **VTP-43742 in psoriasis is on track for proof of concept (PoC) data by year-end 2015.** Recently Vitae announced the initiation of clinical testing for VTP-43742, a RORγt modulator, in healthy volunteers (Phase 1a) and in Q3 plans to begin testing in psoriasis patients (Phase 1b PoC) with data releases for both in H2:15. We believe that VTP-43742 has the potential to achieve blockbuster sales if it follows the path of recently launched psoriasis drugs (Stelara-launched 2009, $2.38BN expected in 2015; Otezla-launched 2014, $1.3BN expected in 2017—source: Bloomberg consensus estimates). The company is planning to develop VTP-43742 for a large market indication (e.g. psoriasis, multiple sclerosis, rheumatoid arthritis) as well as for a rare disease.

Figure 1: MILESTONES (*OUR ESTIMATES;BLOOMBERG ESTIMATES)**

Timing	Milestones	Estimated Probability	Estimated Upside/Downside
Sep 8**	Q2 FINANCIAL RESULTS	--	--
H2:15	VTP-43742/ AUTOIMMUNE: PHASE 1 DATA RELEASE	50:50	± 0-15%
H2:15	VTP-34072/T2D-META: PHASE 2 DATA RELEASE (MONOTHERAPY ARM)	--	--
Q4:15	VTP-43742/ AUTOIMMUNE: PHASE 1 POC DATA RELEASE IN PSORIASIS	50:50	± 5-20%
YE:15/H1:16*	BI-1147560(BACE) INITIATE PHASE 1 CLINICAL TRIAL	60:40	±5-15%
H2:15	VTP-38543/ATOPIC DERMATITIS: INITIATE PHASE 1 CLINICAL TRIAL	--	--
H1:16*	VTP-38543/ATOPIC DERMATITIS: PHASE 1 DATA RELEASE	50:50	± 0-15%

Source: Company data, Wedbush Securities, Inc.

- **NEXT: Q2 financial results possibly on September 8th (Bloomberg estimate) and the possible announcement of the initiation of the multiple ascending dose of VTP-43742 before the end of this quarter.**

- **We reiterate our OUTPERFORM rating and $20 twelve-month price target**. Our 12-month PT uses a sum-of-parts plus our estimate for year-end cash with each part calculated using a 30% annual discount from peak sales of each drug/disease to present day and applying a 1-10x multiple, depending on stage of development to reflect risk and dividing by diluted share count.

INVESTMENT THESIS: *Vitae, located in Fort Washington, Pennsylvania, is a clinical-stage emerging pharmaceutical company focused on discovering and developing novel, small molecule drugs for diseases with significant unmet medical needs. The company's proprietary structure-based drug design platform called Contour® has provided multiple, high-quality product candidates which have attracted over $150 million in collaboration funding from big pharma. After the apparent failure of VTP-34072 in diabetes, Vitae has one remaining partnered product candidate in the clinic (VTP-37948 in Alzheimer's) with Boehringer Ingelheim (BI) and has initiated clinical testing of VTP-43742—one of several wholly-owned product candidates from preclinical development and expects to initiate VTP-38543 clinical testing in atopic dermatitis in 2015, as well. The company anticipates release of proof-of-concept results for VTP-43742 in psoriasis by the end of 2015. Earlier-stage product candidates are currently unpartnered and include VTP-38443 for the treatment of acute coronary syndrome (ACS). Vitae intends to develop and commercialize the proprietary programs and/or to strategically partner them as appropriate. We have projected clinical development and potential regulatory approvals so that the first product could be launched in late 2020. We project the first full year of profitability in 2021 from revenues of about $88.5 million. As of the end of Q1:15, Vitae has $88.7MM in cash and cash equivalents, which we expect to provide cash runway covering transforming clinical data releases from multiple product candidates. On February 26 2015, Vitae announced that its partner Boehringer Ingelheim placed on temporary clinical hold its Phase 1 trial of VTP-37948 for the treatment of Alzheimer's disease. BI ultimately decided to discontinue development of VTP-37948 and move forward with a structurally distinct, Phase 1 ready BACE1 inhibitor, BI-1147560/VTP-36951. On July 27, 2015, Vitae announced that BI decided to end the collaboration surrounding the BACE/Alzheimer program and their partnership. It is our understanding that the termination of the partnership was a strategic business decision by BI and not related to the compound. We currently believe the cost associated with running a Phase 1 trial for VTP-36951 are not prohibitive, therefore believe Vitae is likely to advance the program forward. We also anticipate upside potential from additional partnerships around their currently unpartnered product candidates and that Vitae's future clinical success could result in the company's acquisition.*

Figure 2: Pipeline Valuation

Vitae Product Pipeline Valuation		Eligible #	Pricing	Gross Sales		Net Revs	Peak		Estimated / Actual	Discount	Estimate	Fair Value
Product	Indication	Patients	$/Patient	($000)	Year	($000)	Penetration	Multiple	Launch	Rate	Fair Value	per Share
BI-1147560 (WW)	Alzheimer's Disease	8,730,000	$5,226	$3,738,358	2026	$867,924	10%	3	3/2/2021	30%	$199,765	$9.15
VTP-43742 (WW)	Psoriasis	654,500	$4,978	$1,175,712	2027	$783,743	34%	3	11/4/2020	30%	$173,024	$7.93
VTP-43742 (WW)	RMS	857,143	$49,683	$3,096,985	2025	$1,362,000	8%	3	11/4/2021	30%	$95,481	$4.37
VTP-38443 (WW)	ACS	600,000	$30,500	$754,409	2028	$274,449	4%	1	12/4/2021	30%	$9,797	$0.45
VTP-38543 (WW)	Atopic Dermatitis	1,235,000	$4,978	$148,850	2028	$50,055	2%	1	8/4/2021	30%	$1,892	$0.09
We use multiples to account for clinical and regulatory risk at various stages of development.									Stock	MktCap ($000)	Upside	
1: in preclinical testing	6: in Phase 3						12-month Price Target		$19.97	$435,934	59%	
2: passed preclinical	7: Phase 3 data						Total Pipeline Value		$24.88	$543,103	98%	
3: IND filing/stable mature product	8: regulatory review							YE:15 Cash	$2.89	$63,145		
4: Phase 1 data	9: approved						Current Stockprice:		$12.55	$273,964		
5: Phase 2 data	10: launched											

Source: Company data, Wedbush Securities, Inc.

RISKS TO THE ATTAINMENT OF OUR 12-MONTH PRICE TARGET

Clinical Risks: Despite producing high-quality product candidates and encouraging initial clinical and preclinical data, Vitae has not completed phase-3 testing with any product candidate and, in general, the majority of clinical candidates fail. Vitae with BI are also developing a treatment for Alzheimer's disease in which the vast majority of clinical candidates have failed. Vitae is also dependent on BI for the proper development of their two lead product candidates VTP-34072 and VTP-37948. Both Vitae and BI use third parties to conduct preclinical and clinical testing which we view as higher risk as we believe third parties may be less motivated to reduce execution risk. Near-term clinical risks including data releases from the two lead programs are the highest risks to our price target at this time, in our view. On February 26, 2015, Vitae announced that its partner Boehringer Ingelheim (BI) placed a temporary clinical hold on its Phase 1 trial of VTP-37948/ BACE1 inhibitor due the observation of skin reactions in some patients. In March 2015, Vitae announced that BI decided to move forward with a Phase 1 ready, structurally distinct BACE inhibitor, BI-1147560. Although management has stated that BI-1147560 is comparable to their previous compound in preclinical efficacy and safety/tolerability profile, we remain cautious that there is the risk that efficacy, safety and tolerability issues may come up in clinical testing. Although results from the placebo arm are expected in 2015, we believe VTP-34072 is likely to be discontinued after the Phase 2 metformin combination arm failed to show additional benefit on fasting plasma glucose.

Regulatory Risks: Despite Vitae's management having big pharma experience, Vitae has not achieved regulatory approval for any product candidate.

Manufacturing Risks: On one hand, we view manufacturing risk to be lower for small molecule drug candidates versus biologics and oligonucleotides; however, Vitae relies on third parties for the manufacture of their product candidates for preclinical, clinical, and potential commercial manufacture and we view third parties as less motivated, in general. Also, if Vitae succeeds at obtaining regulatory approval for a product candidate, the current purchase order supply arrangements will need to be augmented with long-term supply arrangements. Vitae intends to also work with additional manufacturers to provide active pharmaceutical ingredients (APIs) and fill-and-finish services prior to pursuing regulatory approval. BI is responsible for the manufacture of API and fill-and-finish services for

BACE. We note that BI observed manufacturing issue(s) with BI-1147560 in preclinical testing which contributed to BI decision to move forward with VTP-37948. Although management has stated that the manufacturing issue(s) have been resolved, we remain cautious that issue(s) or related issues may resurface.

Commercial Risks: For their unpartnered programs, Vitae anticipates retaining US commercial rights in specialty markets and establish regional partnerships to commercialize outside the United States. At this time, Vitae does not have a sales force or marketing capabilities. For the Alzheimer's program, Vitae expects BI to commercialize this product with their sales and marketing group.

Competition Risks: Vitae's product candidates, if approved, will compete with currently marketed treatments and potentially with product candidates currently in development focusing on the same mechanism of action which include: 1) 11β-HSD1 competition from Bristol-Myers Squibb, Eli Lilly & Co., and Roche Holding AG, which are also testing their inhibitors in clinical trials; 2) BACE competition from Merck & Co., AstraZeneca PLC and Eisai Co., Ltd. in collaboration with Biogen Idec which are studying BACE inhibitors in clinical trials; 3) RORγt competition from potentially multiple companies which are actively assessing RORγt inhibitors in preclinical studies; and 4) LXRβ competition from Bristol-Myers Squibb, which is testing an LXRβ inhibitor in cardiovascular clinical trials and Alexar Therapeutics, Inc., which is developing an LXRβ inhibitor for dermatologic conditions.

Intellectual Property Risks: Due to the nature of Vitae's business model, we consider intellectual property risks to be low as the company discovers its own product candidates and has composition-of-matter protection to 2030 and beyond.

Financial Risks: Vitae is a development-stage emerging pharmaceutical company and, despite receiving substantial partnership income from Boehringer Ingelheim, they have no product sales or royalty income and are unlikely to before late 2019. Vitae ended Q1:15 with $88.7MM in cash and cash equivalents. Management guided to runway through 2016 and we project that with the addition of $7MM from an anticipated milestone in Q4:15 from BI, we project Vitae has cash runway through Q1 2017.

Analyst Certification
I, Liana Moussatos, Ph.D., Kelechi Chikere, Ph.D., certify that the views expressed in this report accurately reflect my personal opinion and that I have not and will not, directly or indirectly, receive compensation or other payments in connection with my specific recommendations or views contained in this report.

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Company	Disclosure
Vitae Pharmaceuticals	1,3,4,5

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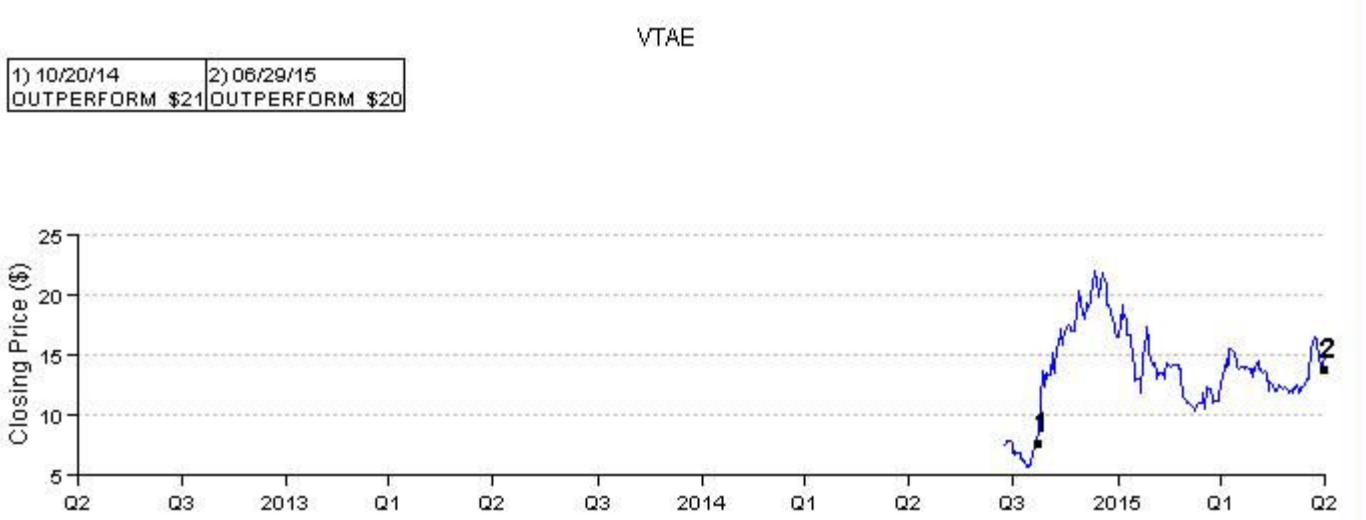

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RESEARCH DEPT. * (213) 688-4529 * www.wedbush.com
EQUITY TRADING Los Angeles (213) 688-4470 / (800) 421-0178 * EQUITY SALES Los Angeles (800) 444-8076
CORPORATE HEADQUARTERS (213) 688-8000

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WEDBUSH

EQUITY RESEARCH DEPARTMENT

(213) 688-4529

DIRECTOR OF RESEARCH
Mark D. Benson (213) 688-4435

MANAGER, RESEARCH OPERATIONS
Ellen Kang (213) 688-4529

RETAIL AND CONSUMER

Healthy Lifestyles
Phil Terpolilli (212) 833-1367
Dominic Ruccella (212) 833-1375

Leisure
James Hardiman, CFA CPA (212) 833-1362
Sean Wagner (212) 833-1363

Restaurants
Nick Setyan (213) 688-4519
Colin Radke (213) 688-6624

Specialty Retail: Hardlines
Seth Basham, CFA (212) 938-9954
John Garrett, CFA (213) 688-4523

Specialty Retail: Softlines
Morry Brown, CFA (213) 688-4311
Taryn Kuida (213) 688-4505

RETAIL CHANNEL CHECKING GROUP

Lupine Skelly (505) 417-5427

INDUSTRIAL GROWTH TECHNOLOGY

Environmental Services / Building Products
Al Kaschalk (213) 688-4539

Water and Renewable Energy Solutions
David Rose, CFA (213) 688-4319
James Kim (213) 688-4380

TECHNOLOGY, INTERNET, MEDIA & SOCIAL MEDIA

Enterprise Software
Steve Koenig (415) 274-6801
Jae Cho (212) 938-9937

Entertainment: Retail
Michael Pachter (213) 688-4474
Alicia Reese (212) 938-9927
Nick McKay (213) 688-4343

Entertainment: Software
Michael Pachter (213) 688-4474
Nick McKay (213) 688-4343

Financial Technology
Gil B. Luria (213) 688-4501
Aaron Turner (213) 688-4429

Internet: Media and Gaming
Michael Pachter (213) 688-4474
Nick McKay (213) 688-4343
Alicia Reese (212) 938-9927

Media
James Dix, CFA (213) 688-4315
Aria Ertefaie (212) 938-9958

Movies and Entertainment
Michael Pachter (213) 688-4474
Alicia Reese (212) 938-9927
Nick McKay (213) 688-4343

Semiconductors
Betsy Van Hees (415) 274-6869

HEALTHCARE

Biotechnology/Biopharmaceuticals
David M. Nierengarten, Ph.D. (415) 274-6862
Dilip Joseph (415) 273-7308
Robert Driscoll, Ph.D. (415) 274-6863

Heather Behanna, Ph.D. (415) 274-6874
Alison Macleod, Ph.D. (415) 273-7315

Emerging Pharmaceuticals
Liana Moussatos, Ph.D. (415) 263-6626
Kelechi Chikere, Ph.D. (415) 273-7304

Healthcare Services - Managed Care & Hospitals
Sarah James (213) 688-4503

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Tao Levy (212) 938-9948
Matthew Won (212) 938-9953

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CORPORATE HEADQUARTERS
1000 Wilshire Blvd., Los Angeles, CA 90017-2465
Tel: (213) 688-8000 www.wedbush.com