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# **Industry Report**

November 7, 2014

Karyopharm								
TG Therapeutics Xencor XNCR BUY \$11.18 \$16.00 Xencor XNCR BUY \$10.88 \$18.00 Attinium ATNM BUY \$7.34 \$16.00 *Price as of November 06, 2014  KPTI: EPS  1Q 2Q 3Q 4Q FY  2014 -0.46A -0.55A -0.46E -0.50E -1.95E 2015 -0.57E -0.58E -0.58E -0.64E -2.37E 2016 2.51E  KPTI: Revenue (\$M)  1Q 2Q 3Q 4Q FY  2014 0.2A 0.0A 0.0E 0.0E 0.0E 0.0E 0.0E 2015 0.0E 0.0E 0.0E 0.0E 0.0E 0.0E 0.0E 0.0	Company		Ticker	Rating	Price*	Price Target		
KPTI: EPS	TG Therapeu Xencor		TGTX XNCR	BUY BUY	\$11.18 \$10.88	\$54.00 \$16.00 \$18.00 \$16.00		
1Q   2Q   3Q   4Q   FY	*Price as of N	ovember 06, 2	2014					
1Q   2Q   3Q   4Q   FY	KDTI. FI	20	_	_	_	-		
2015	KPII: EI		2Q	3Q	4Q	FY		
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XNCR: EPS         1Q         2Q         3Q         4Q         FY           2014         -0.12E         -0.16E         -0.18E         -0.17E         -0.63E           2015         -0.15E         -0.15E         -0.15E         -0.15E         -0.15E         -0.59E           2016         -         -         -         -         -         -0.70E           XNCR: Revenue (\$M)         1Q         2Q         3Q         4Q         FY           2014         2.2E         0.8E         0.5E         0.3E         3.8E           2015         0.4E         0.4E         0.4E         0.4E         1.6E           2016         -         -         -         -         -         1.5E           ATNM: EPS           ATNM: Revenue (\$M)         -         -         -         -         -         -0.99E           2014         -         -         -         -         -         -         -0.93E           ATNM: Revenue (\$M)         1Q         2Q         3Q         4Q         FY           2014         -         -         -         -         -         -         -         -         -         <				3Q	4Q	FY		
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2015         -0.15E         -0.15E         -0.15E         -0.15E         -0.15E         -0.59E           2016         —         —         —         —         -0.70E           XNCR: Revenue (\$M)         IQ         2Q         3Q         4Q         FY           2014         2.2E         0.8E         0.5E         0.3E         3.8E           2015         0.4E         0.4E         0.4E         0.4E         1.6E           2016         —         —         —         —         1.5E           ATNM: EPS         TQ         3Q         4Q         FY           2014         -0.66A         0.10A         -0.16E         -0.15E         -0.81E           2015         —         —         —         —         -0.99E           2016         —         —         —         —         -0.93E           ATNM: Revenue (\$M)           1Q         2Q         3Q         4Q         FY           2014         —         —         —         —         0.0E           2015         —         —         —         —         —         0.0E           2015         —         <		1Q	2Q	3Q	4Q	FY		
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2014         2.2E         0.8E         0.5E         0.3E         3.8E           2015         0.4E         0.4E         0.4E         1.6E           2016         —         —         —         —         1.5E           ATNM: EPS           1Q         2Q         3Q         4Q         FY           2014         -0.66A         0.10A         -0.16E         -0.15E         -0.81E           2015         —         —         —         —         -0.99E           2016         —         —         —         —         -0.93E           ATNM: Revenue (\$M)           1Q         2Q         3Q         4Q         FY           2014         —         —         —         —         0.0E           2015         —         —         —         —         0.0E	XNCR: F	Revenue (	\$M)					
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# ASH Abstract Review Promising Data from Selinexor, TG-1101 & TGR-1202, XmAb5574, and Actimab

Yesterday, abstracts for the annual meeting for the American Society of Hematology were released. KPTI's selinexor had impressive data in myeloma patients (median of 6 prior therapies) and relapsed /refractory diffuse large B cell lymphoma. XNCR's partnered XmAb5574/MOR208 also showed very good efficacy in relapsed/refractory CLL. TGTX's 1101 and 1202 showed comparable efficacy and better safety than competitors. Elderly AML patients treated with ATNM's Actimab had 9 mo OS.

KPTI's SINE Selinexor + Dex Has an Impressive 60% RR in r/r Myeloma. At EHA in June, 4/8 patients from this study arm responded, and as of this ASH update, 6/10 had a response (1 sCR, 5 PR), and 7/10 remain on study (11-25 weeks). We note 2 additional responders could have arisen from either 2 new patients or from conversion of one/both MRs that were ongoing at EHA. We look forward to the full data at ASH. In a separate arm with 7 patients treated at 2/3 the selinexor dose and <20mg dex, 14% had a response. We view the dose response and 60% RR in these patients with a median of 6 prior therapies as a clear positive and continue to expect regulatory approval for myeloma in 2019.

Single Agent Selinexor Has Dose-Responsive and Durable Effect in r/r Aggressive B-NHL. High-dose selinexor had 4/10 responders (40%), mid-dose 7/21 (33%), and low dose 1/4 (25%). Of 34 patients, 9 remained on selinexor for >6-23 months. We continue to expect the registration-directed Ph2 to support approval in 2017.

TG-1101 Ublituximab and TGR-1202 Are Competive. In r/r CLL, Ph1 1101 + 1202 had 80% ORR, comparable to idelalisib + rituximab, while 1202 monotherapy induced 55% PR with a better safety profile than idelalisib or IPI-145. In 18 Ph2 r/r CLL patients, 1101 + ibrutinib exhibited an impressive 94% ORR. Of note, 8/8 patients with high risk 17p/11q responded and 9/10 without 17p/11q responded. Of 6 r/r MCL patients, 3 achieved CR and 2 PR (83% RR). We view TGTX's ability to pair a PI3K inhibitor with an anti-CD20 antibody in-house as particularly attractive and note 1202's better safety profile makes it easier to combine with other drugs.

XNCR's Anti-CD19 XmAb5574/MOR208 Effective and Durable in High Risk r/r CLL in Phase 1 Study. Of 27 patients with a median of 4 prior treatments, most of whom have high risk disease, 30% achieved a PR and 59% had SD. AEs appear in-line with anti-CD20 Rituxan in a similar patient population. Eight patients extending treatment had PFS of 420 days. Partner Morphosys also announced that FDA has granted '5574 Fast Track. As a reminder, under the partnership agreement, XNCR has no further funding obligations for '5574 and is entitled to double-digit royalties on potential sales and \$299M remaining milestones. We view the data as solid and continue to expect approval in 2019.

Elderly AML Patients Treated with Actimab Have Median Survival of 9.1 months. Results from 7 newly diagnosed, elderly secondary AML patients treated in Phase 1/2 will be released as a publication only.

**KOL Luncheon Monday, 12/8.** We will be hosting a luncheon with a lymphoma specialist at the ASH meeting.

#### IMPORTANT DISCLOSURES AND CERTIFICATIONS.

MLV & Co LLC is a provider of research and execution services. MLV is a member of FINRA. MLV does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Please see important disclosures on page 8 - 12.

# Karyopharm (KPTI) - Buy Rated - \$54 PT

# Abstract 396, Session 623. Monday, December 8, 11:45 AM

40% RR in r/r aggressive NHL with selinexor

Selinexor demonstrates dose response, clear efficacy, and durable effect in aggressive B-cell NHL. The Phase 1 enrolled 58 relapsed and refractory (r/r) NHL patients with documented progression at study entry and dosed them at 3-80mg/m2 selinexor for 4-10 doses in a 28-day cycle. Patients had a median of 3 prior regimens and were assessed for response in cycle 1, cycle 2, and every 2 cycles thereafter. In 35 r/r aggressive B-NHL (DLBCL, follicular NHL grade 3b and transformed NHL) patients, response rates (RR) at the following doses were:

- 25% RR (1/4 PR) and 1/4 (25%) SD at ≤ 20mg/m2 selinexor
- 33% RR (4/21 CR + 3/21 PR) and 5/21 (24%) SD at 20-50mg/m2
- 40% RR (4/10 PR) and 4/10 (40%) SD at 60mg/m2

Grade 3/4 adverse events include 31% thrombocytopenia, 22% neutropenia, 10% fatigue, and 7% anemia. Of 34 patients, 9 remained on selinexor for >6 to 23 months without significant cumulative toxicities or organ dysfunction, indicating selinexor is tolerable at effective doses. While these data are current through August 5, the authors noted that best response was delayed, introducing the possibility for subsequent conversions to a response.

# Poster 4773, Session 653. Monday, December 8, 6:00 -8:00 PM

60% RR in r/r MM patients with median 6 prior therapies

Strong selinexor data in highly refractory MM. Phase 1 enrolled 28 r/r MM patients with a median of 6 prior treatment regimens including a proteasome inhibitor and an IMiD. In 22 r/r MM, responses were at the following doses:

- 60% RR (1/10 sCR + 5/10 PR) and 2/10 (20%) SD at 45 mg/m2 selinexor + 20 mg
- 14% (1/7) RR and 72% (5/7) SD at 30 mg/m2 selinexor + <20mg dexamethasone
- 50% (6/12) SD at 30-60mg/m2 selinexor monotherapy

Of note, 7/10 patients from the 45mg/m2 + 20 mg dexamethasone were still on study (11-25 weeks) as of August 5.

# Additional KPTI presentations:

dexamethasone

Poster 995, Session 616. Saturday, December 6, 5:30-7:30 PM

2 November 7, 2014

Poster 1458, Session 311. Saturday, December 6, 5:30-7:30 PM Poster 2084, Session 652. Saturday, December 6, 5:30-7:30 PM Poster 2254, Session 605. Sunday, December 7, 6:00-8:00 PM Poster 3443, Session 652. Sunday, December 7, 6:00-8:00 PM Poster 3444, Session 652. Sunday, December 7, 6:00-8:00 PM Poster 4503, Session 625. Monday, December 8, 6:00-8:00 PM

TG Therapeutics (TGTX) - Buy Rated - \$16 PT

TG-1101 and TGR-1202 data comparable to competitors. TG Therapeutics released clinical data from three separate studies on TG-1101 (ublituximab) and TGR-1202. TGTX is testing both in B-cell malignancies. TG-1202 is a PI3K-delta inhibitor, in the same class as idelalisib (Zydelig, Gilead, GILD, NR) and IPI-145 (Infinity, INFI, NR). Ublituximab is an anti-CD20 antibody, similar to rituximab (Rituxan, Roche, ROG.SWX, NR), but glycoengineered to enhance antibody-dependent cell-mediated cytotoxicity. In our view TG Therapeutics has a portfolio that can compete head-to-head with other PI3K inhibitors and CD20 antibodies on the market.

TGR-1202 monotherapy induces a PR in 55% of patients with r/r CLL. Safety profile looks better than idelalisib or IPI-145

Poster 1984, Session 642. Saturday, December 6, 5:30 -7:30 PM.

TGR-1202 exhibited convincing activity in relapsed and refractory (r/r CLL and B-cell non-Hodgkin lymphoma (NHL) in Phase 1 data. Nine chronic lymphocytic leukemia (CLL) patients treated at ≥ 800mg of an original formulation or ≥ 200mg of a micronized formulation were evaluable. 5 out of the 9 achieved a PR using the 2008 IWCLL criteria. In a similar Phase 1 study, idelalisib achieved a 72% overall response rate (RR, Brown et al, Blood, 2014).

- TGR1202 in 9 r/r CLL patients 55% RR
- Idelalisib in 54 r/r CLL patients 72% RR

TGR-1202 also elicited a PR in 2 of 7 evaluable patients with follicular lymphoma and the remaining 5 achieved stable disease. No patient with CLL or indolent lymphoma treated at ≥800mg has progressed so far (median time on study 20 weeks, range 6 to 73+). No patient with a >50% reduction in tumor burden has progressed (median 34 weeks, range 7 to 68+). Importantly, TGR-1202 exhibited a better safety profile than either idelalisib or IPI-145. The only ≥ Grade 3 event was neutropenia, which at 8% is lower than the 30% range generally observed with idelalisib and IPI-145. The most frequent side effect overall was diarrhea, which at 24% was in the same range as idelalisib and IPI-145, but both of those have reported that around

5% of patients develop ≥ Grade 3 diarrhea. TGTX also reported that there was no indication of hepatotoxicity, whereas idelalisib and IPI-145 both cause ≥Grade 3 elevations in ALT/AST numbers in 5% to 10% of patients.

TG1101 in combination with ibrutinib elicits a 94% RR in relapsed and refractory CLL

Poster 4679, Session 642. Monday, December 8, 6:00 -8:00 PM

**Excellent Phase 2 results from TG-1101 in combination with ibrutinib.** TG-1101 was paired with ibrutinib, a Bruton's tyrosine kinase inhibitor, in relapsed and refractory CLL, small lymphocytic lymphoma (SLL), or mantle cell lymphoma (MCL). The reported 94% RR in 17 out of 18 r/r CLL patients matches the 95% RR that was recently published for ibrutinib, in combination with rituximab in r/r CLL. Both studies included patients with high risk 17p/11q cytogenetics. A high RR (83%) was also observed in MCL patients, 5 out of 6. Most of the adverse events reported in the abstract were also seen at similar levels in the ibrutinib/rituximab study, including neutropenia, diarrhea, and rash, and none of the Grade 3 / 4 events were seen in more than 5% of the patients. Overall TG-1101 seems to have a very satisfactory safety profile.

TGR-1202 combined with TG-1101 yields results comparable to idelalisib paired with rituximab

Oral 801, Session 624. Tuesday, December 9, 8:00 AM.

TG Therapeutics also reported impressive Phase 1 data on TGR-1202 paired with TG-1101. This combination elicited an 80% RR in r/r CLL, (4 out of 5 patients) with a median of 3 prior treatments. Two out of three patients with 17p/11q deletions achieved a PR. These results are comparable with the 77% RR observed in a Phase 3 trial of idelalisib paired with rituximab in patients with r/r CLL (poster 330). TGR-1202 and TG-1101 also exhibited a 40% RR in Diffuse Large B-cell Lymphoma patients (2 out of 5). Once again, the safety profile of the TGR-1202 and TG-1101 duo seems quite acceptable. The most common event, infusion related reaction, was reported in 48% of patients which is in line with the 46% rate reported for rituximab. Only one of those reactions exceeded Grade 1 / 2. The neutropenia (38%) and diarrhea (29%) were also comparable to what has been seen with other PI3K inhibitors.

# Xencor (XNCR) - Buy Rated - \$18 PT

Xencor (XNCR) also has data at ASH, including Phase 1 results on XmAb5574/MOR00208 from its partner Morphosys (MOR.DE, NR), and three wholly owned preclinical primate studies from its bispecific antibody program. XmAb5574 is a next generation anti-CD19 antibody. Since the expression pattern of CD19 largely overlaps

with CD20, XmAb5574 is appropriate for targeting B-cell malignancies. Early studies with anti-CD19 antibodies exhibited disappointing activity in clinical trials, but XmAb 5574 features a modified Fc domain that increases antibody-dependent cell-mediated cytotoxicity. While the results in the ASH abstract are from a single arm study using XmAb5574 as monotherapy, to us it appears that XmAb5574 exhibits a more potent effect in CLL than rituximab, the industry standard antibody therapy used for B-cell malignancies.

Poster 1993, Session 642. Saturday, December 6, 5:30 -7:30 PM

XmAb5574 looks better than rituximab when used as monotherapy in high risk relapsed and refractory CLL

XmAb5574 has clear and durable effect in r/r CLL. XmAb5574 was tested in 27 patients with r/r CLL. The patients were largely high risk, with a median of 4 prior treatments, 52% having del(17p13.10) and 88% having unmutated IgHV. By the 2008 IWCLL criteria, 8 patients (30%) achieved a PR and 16 patients achieved stable disease. The characteristics of the patients in this study closely resemble those described in an analysis of patients with adverse prognostic factors in a Phase 3 study of idelalisib plus rituximab vs placebo plus rituximab (Poster 330). The rituximab monotherapy only exhibited a 15% RR in this patient population as compared to the 30% observed with XmAb5574. Patients treated with 9 doses or less of XmAb5574 had a median progression free survival (PFS) of 189 days, while the 8 patients in the extended treatment cohort had a PFS of 420 days (95% CI: 168 days-not reached). The maximum tolerated dose for XmAb5574 was not reached. Of the 27 patients, 5 (19%) experienced Grade 3 / 4 adverse events. These included neutropenia, (3 patients, 11%), thrombocytopenia (2 patients, 7%), elevated aspartate aminotransferase (AST; 1 patient, 4%), and tumor lysis syndrome (1 patient, 4%). These levels generally match what was seen in the rituximab study, where patients exhibited neutropenia (10%), thrombocytopenia (8%), and elevated AST (1%).

Poster 3111, Session 625. Sunday, December 7, 6:00 -8:00 PM
Poster 2316, Session 616. Sunday, December 7, 6:00 -8:00 PM
Poster 4727, Session 652. Monday, December 8, 6:00 -8:00 PM

Xencor's bispecific antibody program generates five interesting candidates. These target three indications: multiple myeloma (MM, XmAb13243 & XmAb13551), acute myelogenous leukemia (AML, XmAb14045), and B-cell malignancies (XmAb13676 & XmAb13677). Bispecific antibodies are heterodimeric antibodies in which each half of the antibody recognizes a different antigen. All three of the bispecifics under development at Xencor recognize CD3 as one of the epitopes. CD3 is part of the T-cell receptor signaling complex. The other half of each bispecific binds to a marker on a hematological

malignancy. The bispecifics are thus designed to tether T-cells to cancer cells and then activate them through their T-cell receptor. When the T-cells get activated they release cytotoxins and other effector molecules directed at the malignant cell. This triggers a much more potent anti-tumor cascade than a normal monoclonal antibody.

The three antigens selected by Xencor for their bispecific program are CD20, found on most B-cells, CD38, which is highly expressed on MM cells, and CD123, which is found on AML stem cells and blasts. Xencor optimized the antibodies and selected candidates with high affinities for the desired targets. They also engineered the Fc domains of the antibodies to abolish nonselective T-cell activation and to maximize serum half-life. These characteristics may give Xencor an advantage when compared to competitors such as daratumumab and blinatumomab. Daratumumab is a monoclonal antibody that targets CD38 and is currently in clinical trials in MM. Being a conventional antibody, it does not elicit a T-cell response. Blinatumomab is an engineered CD3/CD19 bispecific antibody that lacks an Fc domain. While it has been granted a priority review by the FDA in the treatment of acute lymphoblastic leukemia, it has an extremely short plasma half-life and require continuous infusion.

Xencor's bi-specific antibodies exert a biological effect in preclinical primate models The three abstracts released by Xencor on their bispecific program all demonstrated in vitro cell killing and prolonged half-lives in mouse models (6 to 8 days). XmAb 13243 and XmAb13551 both suppressed the formation of CD38+ antibody producing plasma cells in mice engrafted with human B-cells, whereas the control antibody did not. Daratumumab exhibited a less potent effect than the bispecifics in this assay. All five of the candidates were tested in cynomolgus monkey models. All five rapidly activated CD4+ and CD8+ T-cells in the blood. Furthermore, each of the antibodies rapidly eliminated endogenous cells expressing the targeted markers. In monkeys treated with XmAb14045, CD123 expressing cells had not recovered by 8 days after treatment, while in monkeys treated with XmAb13676 and XmAb13677, B-cell numbers had not recovered even 29 days after treatment.

Actimab-A demonstrates overall survival of 9.1 months in difficult to treat AML patients

#### Actinium Pharmaceuticals (ATNM) – Buy Rated – \$16 PT

Actimab demonstrates activity in AML. Actinium also press released that interim results from a Phase 1 / 2 trial with Actimab-A had been accepted as a publication only abstract at ASH. Actimab-A is an anti-CD33 antibody conjugated to the radioisotope Actinium-225. CD33 is a cell marker expressed on most AML blasts. The seven patients described in the release were all over 70 years old and had

myelodysplastic syndrome that had progressed to AML after treatment with hypomethylating agents. The historical survival in this patient population is 2-5 months.

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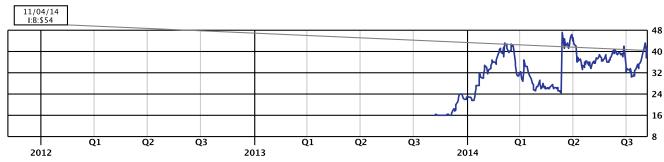
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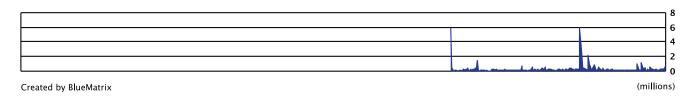
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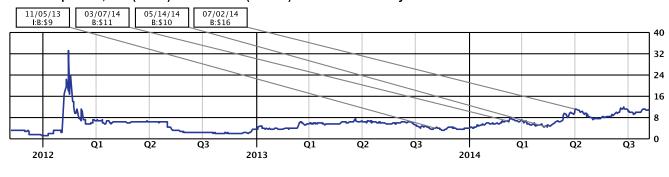
All required current disclosures on subject companies covered in this report may be obtained by contacting Randy Billhardt at MLV at 212-542-5882 or rbillhardt@mlvco.com.

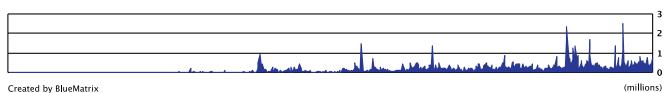
# Karyopharm Therapeutics Inc. (KPTI): Share Price (in USD) and Volume History as of 11-06-2014

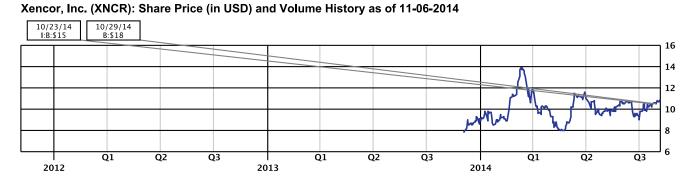


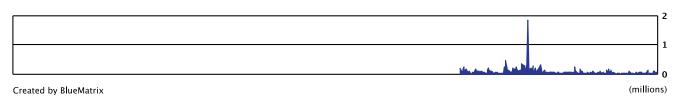


# TG Therapeutics, Inc. (TGTX): Share Price (in USD) and Volume History as of 11-06-2014



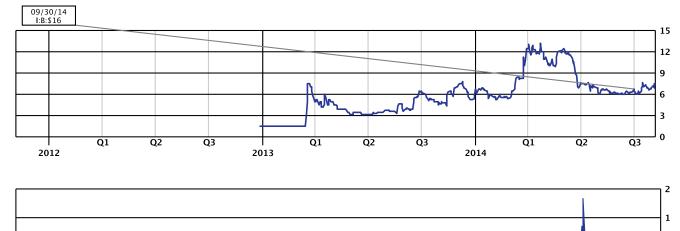






(millions)

# Actinium Pharmaceuticals Inc. (ATNM): Share Price (in USD) and Volume History as of 11-06-2014



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	COMPANIES UNDER COVERAGE		INVESTMENT BANKING SERVICE WITHIN 12 MONTHS	
Rating	Count	Percent	Count	Percent
BUY	107	65.24%	48	29.27%
HOLD	57	34.76%	21	12.80%
SELL	0	0.00%	0	0.00%

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#### LOCATIONS **CONTACT INFORMATION New York** Research | Healthcare **Sales and Trading** 1251 Avenue of the Americas Arlinda Lee, Ph.D. Scott Ammaturo 41st Floor alee@mlvco.com sammaturo@mlvco.com New York, NY 10020 646-556-9218 646-412-7701 212-542-5880 Vernon T. Bernardino **Roger Weiss** Houston vbernardino@mlvco.com rweiss@mlvco.com 520 Post Oak Blvd 646-412-7675 212-542-5867 Suite 850 Houston, TX 77027 George B. Zavoico, Ph.D. Brian M. Dorst 832-208-2030 gzavoico@mlvco.com bdorst@mlvco.com 212-542-5877 212-542-5879 San Francisco Ben Shim **Brad Deason** 505 Sansome Street bdeason@mlvco.com bshim@mlvco.com Suite 375 646-412-7703 832-319-2029 San Francisco, CA 94111 212-542-5880 Brandi Gatlin Thomas Yip tyip@mlvco.com bgatlin@mlvco.com

212-542-5876