Korea Investment
& Securities Co., Ltd.

GemVax & Kael (082270)

Company Brief /

May 30, 2012

12M rating	**Not Rated**
12M TP	**NA**
Up/downside	**NM**

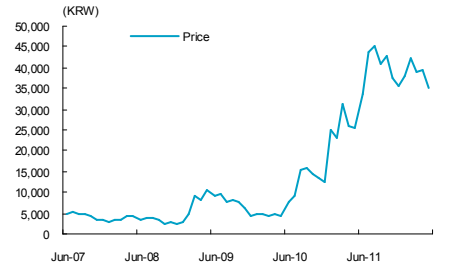
Stock Data

KOSPI (May 29, pt)	1,850
Stock price (May 29, KRW)	35,150
Market cap (USD mn)	742
Shares outstanding (mn)	24
52-Week high/low (KRW)	48,800/21,850
6M avg. daily turnover (USD mn)	6.9
Free float / Foreign ownership (%)	88.5/3.3
Major shareholders (%)	
Tong 0.917	11.2

Performance

	1M	6M	12M
Absolute (%)	(11.7)	(4.5)	40.6
Relative to KOSPI (%p)	(5.3)	(4.1)	52.5

12MF PE trend



Source: WISEfn consensus

NDR feedback: Waiting on pancreatic cancer vaccine clinical trial result

Most reliable short-term drug pipeline momentum

GemVax, a specialist in cancer vaccines, is the second-largest biotech stock on the Kosdaq measured by market cap. At present, the overall mood for biotech stocks is bearish. But the top-tiers such as GemVax and Celltrion should soon see the momentum of finalized global clinical trials or FDA approvals that could rebound share prices in 2H12. GemVax trades at 2012F PSR 13.5x (2012F consolidated sales of W64.4bn estimated) compared to the domestic biotech firm average of 11x. The current share price is 39% discounted to the past three-year peak. We estimate the intrinsic value of major pipeline at W1.309trn or a per-share value of W54,701 (see valuation table on pg 3).

GV1001 clinical trial for pancreatic cancer to end in May

GemVax's biotech business has a pipeline for GV1001, a drug named one of the world's 11 most-promising cancer vaccines by Oncology Business Review. GemVax secured the source technology for a world-class cancer vaccine after Dr. Jay Sangjae Kim acquired financially troubled Gemvax from a Danish company in 2008. The phase 3 trial of GV1001 for use in pancreatic cancer patients is fully funded by the Cancer Research UK and should be completed by end-May. When the CSR (clinical study report) is released in Jun-Aug, GemVax's biotech unit would complete the licensing negotiations for GV1001 with global pharmaceuticals.

Investor interest centered on the release of clinical study report and licensing deal in Europe

Recently, we participated in a domestic NDR with GemVax. Investors' questions were centered on when the CSR on GV1001 for indications on pancreatic cancer will come out and what is the likelihood of success. Investors were also interested in the future signing of licensing contracts with global pharmaceutical companies and the contract value. GemVax has one of the most attractive pipelines among Korean drug/biotech stocks in terms of global awareness and short-term earnings visibility. Thus, there is no dispute that GemVax will become the most prominent driver of the sector in 2H12. But it is difficult to preemptively accumulate shares in a biotech company that generates no profit, particularly in the global financial headwind. As such, investors are waiting for buy opportunity that will appear after the GV1001 clinical trials or a licensing deal is imminent.

	2007A	2008A	2009A	2010A	2011A
Sales (W bn)	13	17	7	20	52
OP (W bn)	2	1	(5)	(12)	(8)
EBT (W bn)	2	1	(13)	(10)	(11)
NP of con. int. (W bn)	0	0	0	(10)	(9)
EBITDA (W bn)	3	2	(4)	(9)	(7)
Net debt (W bn)	(7)	1	(1)	5	(22)
OP margin (%)	15.1	6.7	(70.1)	(58.4)	(16.3)
ROE (%)	10.2	3.3	(49.0)	(31.3)	(27.0)
Dividend yield (%)	4.3	0.0	0.0	0.0	0.0
EPS (KRW)	352	117	(1,158)	(486)	(397)
Chg. (% YoY)	(36.2)	(66.8)	NM	NM	NM
BPS (KRW)	3,664	3,668	2,325	1,442	1,623
DPS (KRW)	150	0	0	0	0
PE (x)	9.9	21.6	NM	NM	NM
PB (x)	1.0	0.7	1.9	8.5	22.0
EV/EBITDA (x)	5.2	8.1	NM	NM	NM

Note: 1) 2007-2009A K-GAAP (Parent), 2010-2010A K-IFRS (consolidated) (including semiconductor filter, stem-cell bank and bio business)
2) Historical data only as the company does not provide guidance for 2012F earnings

Jung-In Lee
822-3276-6239
jilee@truefriend.com

Investor focus on GV1001 (pancreatic cancer vaccine) clinical trials

NDR summary

Company highlights	
1)	Confident in successful completion of the GV1001 clinical trials for pancreatic cancer
2)	Sales of the distribution rights in Europe to gather pace after the clinical study report (CSR) is released Licensing negotiations ongoing with the global top 10 pharma companies Upfront fees worth US100mn-USD500mn, the biggest-ever deal in Korea
3)	GV1001's anti-inflammatory effects newly discovered Considering global anti-inflammatory market size of W80trn, sales of GV1001 as an anti-inflammatory treatment should surpass the sales as a therapy for the already-known indications; Stirring great interest in medical circles
4)	Stable financial structure: Major clinical trials funded by external investment or the government's support; Feeling no capital pressure thanks to robust semiconductor filters and stem-cell businesses
Investors feedback	
1)	Most attractive late-stage pipeline in the domestic pharmaceutical/biotech sector
2)	Success of the GV1001 clinical trials for pancreatic cancer and the licensing deals are key variables for the share's upside
3)	Big chance of success for the clinical trials for pancreatic cancer; In a bearish market, it is better to wait until the upswing momentum is imminent rather than preemptively reeling in the stock
4)	Regarding the wider GV1001 indications, chance of additional sales and enthusiastic response by the medical profession are positive; Investors were rather lukewarm because the short-term effects are minimal

Source: Company data, Korea Investment & Securities

Q&A summary

Q1. What steps will be taken after completion of the GV1001 clinical trials for pancreatic cancer?

Company answer

Events
1) Close of the clinical study data (May 27, 2012) Recruited 1,110 patients as of May 27, 2011; Considering a one-year clinical study period, the trial will end May 27, 2012
2) Release of the clinical study report (CSR, Jun-Aug 2012) Considering 1.5-3 months preparation period, the report will come out in Jun-Aug; Little chances of delay given that the major target of the clinical trial is very simple and clear (i.e.,10%p or more survival months for the GV1001-treated group compared to the control group)
3) Bidding for licenses in Europe (Jun-Aug 2012) Right after the CSR release
4) Approval and sales in Europe (2013) Likely to take one year from the application filing to approval; Given that the clinical trials are supported by the UK government and the survival rate for pancreatic patients is very low at present, the UK is expected to give a prompt approval

Source: Company data, Korea Investment & Securities

Q2. What is the likelihood of success for the GV1001 trials for pancreatic cancer?

A. There is a big likelihood of success. 1) The clinical trials already passed three rounds of interim analysis from 2007 to 2011. 2) The large-scale patient recruitment (1,110) has been completed a year earlier than scheduled. 3) The phase 2 trial data (average survival months of patients: 8.6 months for GV1001-treated vs. 4.5 months in the control group) already meet the primary endpoint[1] (10%p or more survival months in the GV1001-treated group than the control group) of the phase 3 trial.

In particular, the early patient recruitment for the clinical trials would have been impossible if it were not for the confidence and encouragement of the participating doctors and the favorable response among patients. GV1001 was extensively covered on BBC1 prime news in Apr 2011. A professor at the Liverpool Cancer Trials Unit (LCTU) who presides over the clinical trials was interviewed by the BBC while the trial was still ongoing, which is very unusual. We believe this also proves GV1001's superior efficacy.

Q3. Do failures in combination treatment with chemotherapy and the 2008 phase 3 clinical trial conducted by Pharmexa in the US mean poor efficacy of GV1001?

A. A combination treatment with chemotherapy is a global trend to maximize the treatment effect. In the phase 2 trial, the mean survival time was much longer (8.6 months) for patients who were treated with GV1001 only than those with existing drugs (e.g., Gemzar and Xeloda).

The problem with the failed phase 3 trial was not the efficacy of GV1001, but the design of the experiment protocol. After completing the phase 2 trial in the UK, Pharmexa was financially vulnerable and proceeded to phase 3 without sufficient preparation. In the process, the company recruited 400 participants, fewer than the guidance recommended 600, and administered only GV1001 instead of in combination with chemotherapy. A combination treatment of Gemzar+Xeloda and GV1001 was administered only when patients' conditions deteriorated. The US Data Monitoring Committee suspended the trial because Pharmexa's protocol violated patients' survival rights by limiting the treatment with Gemzar and Xeloda that could prolong a patient's life. At present, GemVax's phase 3 trial in the UK has no such problem as it adopted a combination treatment as summarized in the table below.

UK phase 3 GV1001 clinical trial: Combination therapy

	Protocol
Control group	Chemotherapy (Gemzar+Xeloda)
Group 1	Gemzar+Xeloda and GV1001 concurrently
Group 2	Gemzar+Xeloda and GV1001 sequentially

Source: Company data, Korea Investment & Securities

Q4. How is the progress of the ongoing licensing negotiations? What is the estimated deal size?

[1] The point considered success for the therapy in trial.

A. The ex-head of global marketing at Roche, who is personally acquainted with GemVax and Korea, is helping the company secure a licensing deal in Europe for GV1001 (injection telomerase peptide vaccine for treating pancreatic cancer). At present, GemVax is in talks with the world's top 10 pharmaceutical companies. After clinical trials are completed and results are released, the company plans to select a partner through a bidding process similar to the domestic licensing agreement for pancreatic cancer therapy (Daewoong Pharma)

Although the amount of the deal will vary according to negotiation outcomes, we estimate the upfront fee to range from USD100mn-500mn and the portion of royalties at more than 20%. The estimated upfront fee will far exceed that of LG Life Sciences' liver disease therapy, which is the best-known example of Korea's technology being exported, alongside Dong-A Pharm's super-bacteria antibiotics (upfront fee W10bn-20bn and royalty weighting 8-10%). The planned completion of the phase 3 trial before the sale and the high brand awareness in Europe should help during negotiations. GemVax was formerly a Norwegian subsidiary of Denmark's Parmexa and at present, clinical trials are in progress at 53 UK hospitals, which makes the deal much more distinguishable from the previous projects pursued by pure Korean firms.

Q5. What about the chances of commercialization? Are there any lessons GemVax can learn from Dendreon's failure commercializing Provenge, the first therapeutic vaccine for prostate cancer?

A. The world's first vaccine for pancreatic cancer is in great demand due to the disease's low survival rate (5-year average 4%) and the absence of alternative treatment. First, pancreatic cancer often goes undetected until it is advanced to the fourth stage and thus is difficult to treat via surgery. Second, Gemzar and Xeloda, currently used as the standard drugs for pancreatic cancer, were originally lung and rectal cancer treatments. In the case of Provenge (USD 220mn in sales in 2011) the reasons why the actual sales came lower than market expectation are 1) the early detection of prostate cancer offers wider options for treatment such as surgery or chemotherapy, 2) the cost burden is heavy for its life-extending effects (Provenge costs USD93,000 vs. GV1001 up to USD40,000 per year), and 3) procedures are complicated. In contrast, GV1001 is free from the obstacles Provenge is facing.

Q6. Clinical progress of GV1001 for indications on lung cancer and time to market

A. With the recruitment of 660 lung cancer patients, clinical trials for the use of GV1001 are scheduled to proceed in eight countries including Korea, the US and Russia. Domestically, GemVax entered phase 3 trial in May 2012. Trials are also scheduled to begin in seven other countries within 2012. The clinical trials should be finalized in 2016 given the usual 18-month recruitment (by 2014) and the two-year observation (2015-2016). The primary endpoint result of the phase 3 trial should be to lift the survival rate of GV1001-injected patients by more than 15%p over those with conventional treatment. In the phase 2 trial, the GV1001 vaccine delivered a much longer survival period of 19.3 months compared to 3.5 months for patients in the control group. Given this, the result of phase 3 trial should be positive as well. SIG (the US investment firm with W240trn in assets and the second-largest shareholder of Dendreon) has also invested in GV1001, greatly recognizing the vaccine's efficacy for lung cancer.

Q7. What is the financial structure? Is there any chance of a rights issue?

A. GemVax was able to raise W44bn considering SIG's USD30mn investment in convertible bonds, equal to 4% of its outstanding shares, and its current assets (land and the office building in Pankyo, Gyeonggi province). Major clinical trials do not incur costs as they are funded by external investment and support. Aside from GV1001, the company (KAEL-GemVax) owns patents for various substances but it will not start reckless clinical trials without external investment. As to other divisions, the stem-cell bank operation has secured corporate customers and the semiconductor filter business should benefit from the government's regulation tightening that shortens the filter replacement cycles. Accordingly, the two operations will together generate 2012 OP of W10bn, which is more than enough to cover the patent maintenance fee (W3bn), the commissions to overseas research advisors (W2bn), and other clinical trials at the biotech business. As such, the company sees no reason for a rights issue.

Key pipeline value: W54,701 per share

	Pancreatic cancer	Lung cancer
Launch	2014F	2017F
Market size (2012F)* (W bn)	2,948	4,715
5th year sales after launch (W bn)	175	780
Peak market share	5.6%	6%
Avg. royalty %	35%	38%
Release possibility	90%	40%
Pipeline PV (W bn)	837	472
FVPS (KRW)	34,980	19,721

Note: 1) Pancreatic cancer treatment: Seven major markets including the US, France, UK and Japan
2) Lung cancer treatment: Global markets
Source: Company data, global pharmaceutical companies, Pfizer, Datamonitor, Thomson, Korea Investment & Securities

Pipeline value: Possible release of GV1001 as a pancreatic cancer treatment in the US, Europe and the Korean markets (90% success)

(Wbn)

	2012F	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F
GV1001 sales as a pancreatic cancer treatment													
Seven major markets*	2,948	3,213	3,533	3,814	4,042	4,202	4,369	4,542	4,722	4,910	5,105	5,307	5,518
Gemzar	231	252	263	269	269	263	256	248	238	228	217	204	190
Xeloda	625	643	671	687	687	672	655	681	708	736	766	796	828
Tarceva	578	597	621	633	630	613	594	182	189	196	204	212	221
Gemzar generics	1,514	1,708	1,920	2,079	2,192	2,264	2,361	2,010	2,069	2,205	2,347	2,518	2,699
GV1001			7	23	49	101	175	236	264	275	286	276	265
Royalty income			2	52	61	77	99	117	126	131	136	135	134
Upfront fee	100		100										
PV of total income	90		79	37	41	47	56	62	62	60	58	53	49
After-tax total pipeline value (tax rate 6.2%)		930											
Pipeline value with release success rate of 90%		837											
Pipeline value per share		34,980											
Key assumptions													
Total market growth (%)	7.9	9.0	10.0	8.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
GV1001 market share (%)			0.2	0.6	1.2	2.4	4.0	5.2	5.6	5.6	5.6	5.2	4.8
Royalty income % of sales			35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.3

Note: 1) Seven major markets: US, France, Italy, Spain, Germany, UK, Japan; 2) Income and PV of income include income from Korean market
Source: Company data, Eli Lilly, Roche, Celgene, Datamonitor, Thomson, Korea Investment & Securities

KAEL-GemVax history

Pre-KAEL-GemVax	
1997	Research and development of telomerase peptide as cancer vaccine in Norway
2001	Establishment of GemVax AS Norway
Apr-05	Denmark-based Pharmexa's takeover of GemVax
Mar-07	Initiation of phase 3 clinical trial for pancreatic cancer (TeloVac)
Oct-08	KAEL(semiconductor clean room filter business)'s takeover of GemVax from Pharmexa
Post-KAEL-GemVax	
May-11	USD30mn investment in clinical trials for lung cancer by US investment firm SIG
May 2012-	Initiation of GV1001 phase 3 clinical trial for lung cancer (Korea); Scheduled completion of phase 3 clinical trial for pancreatic cancer (UK)

Source: Company data, Korea Investment & Securities

GV1001 overview

Mechanism of GV1001	
GV1001	Peptide vaccine targeting telomerase, which is over-expressed in most tumor cells and composed of 1,132 amino acids
	GV1001 based on 16 peptides, 611-612
Mechanism	1) GV1001 injection
	2) GV1001 stimulates T-cells (lymphocytes) to recognize tumor cells
	3) T-cells shift to telomerase activated parts
	4) Attack and kill tumor cells

Source: Company data, Korea Investment & Securities

World's promising cancer vaccines

	Company	Brand	Indication
In phase 3	Avax Technologies	Mvax	Melanoma
clinical trial	Vaccinogen	OncoVAX	Colon cancer
	Biovest/Accentia	BiovaxID	Non-Hodgkin's lymphoma
	GlaxoSmithKline	MAGE-A3	NSCLC; Melanoma
	Merck	StimuVax	NSCLC
	NovaRX	Lucanix	NSCLC
	KAEL-GemVax	GV1001	Pancreatic cancer
	Medarex/BMS	MDX-1379 + MDX-010	Melanoma
	Oxford Biomedica	Trovax	RCC
	Northwest Bio	DCVax Prostate	Prostate cancer
FDA	Merck	Gardasil (Jun 2006)	Uterine cervical cancer
approved	GlaxoSmithKline	Cervarix (Oct 2009)	Uterine cervical cancer
	Dendreon	Provenge (Apr 2010)	Prostate cancer

Source: 2012 Oncology Business Review, Company data, Korea Investment & Securities

Changes to recommendation and price target

Company (Code)	Date	Recommendation	Price target
GemVax & Kael (082270)	05-29-12	Not Rated	NA

Balance sheet

FY-ending Dec. (W bn)	2007A	2008A	2009A	2010A	2011A
Current assets	12	17	31	14	47
Cash & cash equivalents	1	1	0	4	31
Accounts & other receivables	2	7	6	7	6
Inventory	1	2	2	2	6
Non-current assets	13	17	24	41	84
Investment assets	2	6	8	6	4
Tangible assets	13	17	24	11	23
Intangible assets	2	6	8	24	35
Total assets	24	33	55	55	132
Current liabilities	2	10	18	19	43
Accounts & other payables	1	2	1	4	6
ST debt & bonds	0	8	17	6	1
Current portion of LT debt	0	0	0	0	0
Non-current liabilities	0	0	5	1	15
Debentures	0	0	0	0	0
LT debt & financial liabilities	0	0	4	0	12
Total liabilities	2	10	23	20	58
Controlling interest	23	23	32	31	37
Capital stock	3	4	7	11	12
Capital surplus	9	9	24	37	48
Capital adjustments	(3)	(2)	1	3	5
Retained earnings	13	13	(0)	(20)	(28)
Minority interest	0	0	0	4	36
Shareholders' equity	23	23	32	35	74

Income statement

FY-ending Dec. (W bn)	2007A	2008A	2009A	2010A	2011A
Sales	13	17	7	20	52
Gross profit	5	5	1	6	16
SG&A expenses	3	4	6	18	24
Other operating gains	0	0	0	(0)	(0)
Operating profit	2	1	(5)	(12)	(8)
Financial income	0	0	1	0	1
Interest income	0	0	1	0	0
Financial expenses	0	1	1	1	3
Interest expenses	0	0	1	0	0
Other non-operating profit	0	1	(2)	3	(1)
Gains (Losses) in associates, subsidiaries and JV	0	(1)	(7)	0	0
Earnings before tax	2	1	(13)	(10)	(11)
Income taxes	0	(0)	0	(0)	(1)
Net profit	2	1	(14)	(10)	(10)
Net profit of controlling interest	0	0	0	(10)	(9)
Other comprehensive profit	0	0	0	(0)	0
Total comprehensive profit	2	1	(14)	(10)	(10)
Total comprehensive profit of controlling interest	0	0	0	(10)	(9)
EBITDA	3	2	(4)	(9)	(7)

Cash flow

FY-ending Dec. (W bn)	2007A	2008A	2009A	2010A	2011A
C/F from operations	2	(3)	(4)	(3)	7
Net profit	2	1	(14)	(10)	(10)
Depreciation	1	1	1	1	2
Amortization	0	0	0	1	0
Net incr. in W/C	(1)	(6)	(1)	4	7
Others	0	2	10	0	9
C/F from investing	(3)	(4)	(31)	(33)	(23)
Capex	(7)	(1)	(6)	(3)	(3)
Decr. in fixed assets	0	2	0	5	1
Incr. in investment	4	(5)	(26)	(31)	(11)
Net incr. in intangible assets	(0)	(0)	(0)	(4)	(4)
Others	(0)	(1)	0	1	(6)
C/F from financing	(0)	7	35	38	41
Incr. in equity	0	0	21	50	26
Incr. in debt	0	8	13	(11)	15
Dividends	(1)	(1)	0	0	(1)
Others	0	(0)	0	(0)	1
C/F from others	0	0	0	(0)	1
Increase in cash	(1)	0	(1)	3	27

Key financial data

FY-ending Dec.	2007A	2008A	2009A	2010A	2011A
Per-share data (KRW)					
EPS	352	117	(1,158)	(486)	(397)
BPS	3,664	3,668	2,325	1,442	1,623
DPS	150	0	0	0	0
Growth (%)					
Sales growth	(6.1)	33.3	(60.1)	NM	161.0
OP growth	(45.3)	(40.7)	NM	NM	NM
NP growth	(38.0)	(66.6)	NM	NM	NM
EPS growth	(36.2)	(66.8)	NM	NM	NM
EBITDA growth	(34.9)	(24.0)	NM	NM	NM
Profitability (%)					
OP margin	15.1	6.7	(70.1)	(58.4)	(16.3)
NP margin	17.2	4.3	(196.4)	(48.4)	(17.7)
EBITDA margin	20.7	11.8	(57.3)	(46.9)	(12.8)
ROA	9.5	2.6	(30.6)	(17.5)	(11.2)
ROE	10.2	3.3	(49.0)	(31.3)	(27.0)
Dividend yield	4.3	0.0	0.0	0.0	0.0
Stability					
Net debt (W bn)	(7)	1	(1)	5	(22)
Debt/equity ratio (%)	1.5	34.5	66.9	26.3	17.4
Valuation (x)					
PE	9.9	21.6	NM	NM	NM
PB	1.0	0.7	1.9	8.5	22.0
PS	1.9	1.0	7.9	12.3	15.6
EV/EBITDA	5.2	8.1	NM	NM	NM

Note: 2007-2009A K-GAAP (Parent), 2010-2010A K-IFRS (consolidated)

■ **Guide to Korea Investment & Securities Co., Ltd. stock ratings based on absolute 12-month forward share price performance**

- BUY: Expected to give a return of +15% or more
- Hold: Expected to give a return between -15% and +15%
- Underweight: Expected to give a return of -15% or less

■ **Guide to Korea Investment & Securities Co., Ltd. sector ratings for the next 12 months**

- Overweight: Recommend increasing the sector's weighting in the portfolio compared to its respective weighting in the Kospi (Kosdaq) based on market capitalization.
- Neutral: Recommend maintaining the sector's weighting in the portfolio in line with its respective weighting in the Kospi (Kosdaq) based on market capitalization.
- Underweight: Recommend reducing the sector's weighting in the portfolio compared to its respective weighting in the Kospi (Kosdaq) based on market capitalization.

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Korea Investment & Securities Co., Ltd. has not provided this report to various third parties.
Neither the analysts covering these companies nor their associates own any shares of as of May 29, 2012.

Prepared by: Jung-In Lee

Korea Investment & Securities Co., Ltd.

HEAD OFFICE
CHUN SOO LIM, Executive Vice President, Head of Global Institutional Group (cslim@truefriend.com +822 3276 5800)
PAUL CHUNG, Sales Trading (pchung@truefriend.com +822 3276 5843)
27-1 Yoido-dong, Youngdeungpo-ku, Seoul 150-745, Korea
Toll free: US 1 866 258 2552 HK 800 964 464 SG 800 8211 320
Fax: 822 3276 5681~3
Telex: K2296

NEW YORK
DONG KIM, Managing Director (dkim@kisamerica.com +1 212 314 0681)
ELAINE LIM, Head of Sales (Elaine@kisamerica.com +1 212 314 0686)
JU KIM, Sales (jukim@kisamerica.com +1 212 314 0683)
Korea Investment & Securities America, Inc.
1350 Avenue of the Americas, Suite 1110
New York, NY 10019
Fax: 1 201 592 1409

HONG KONG
DANIEL KIM, Managing Director, Head of HK Sales (daniel.kim@kisasia.com +852 2530 8950)
SANGME LEE, Merchandising Director (sangme.lee@kisasia.com +852 2530 8910)
DAN SONG, Sales (dan.song@kisasia.com, +822-3276-5621)
JUN HWAN KIM, Sales (jun.kim@kisasia.com, +852-2530-8912)
Korea Investment & Securities Asia, Ltd.
Suite 2201-2, Jardine House
1 Connaught Place, Central, Hong Kong
Fax: 852-2530-1516

SINGAPORE
SUNG NAMGOONG, Managing Director, Head of Singapore Sales (snamgoong@truefriend.com +65 6501 5601)
ALEX JUN, Sales (alex.jun@truefriend.com +65 6501 5602)
Korea Investment & Securities Singapore Pte Ltd
1 Raffles Place, #43-04, One Raffles Place
Singapore 048616
Fax: 65 6501 5617

LONDON
JJ MOON, Managing Director (jamesmoon@kiseurope.com +44 207 065 2765)
MINGOO KANG, Sales (mingookang@kiseurope.com, +44 207 065 2760)
Korea Investment & Securities Europe, Ltd.
2nd Floor, 35-39 Moorgate
London EC2R 6AR
Fax: 44-207-236-4811
Telex: 8812237