February 24, 2016

Zacks Small-Cap Research

Brian Marckx, CFA
bmarckx@zacks.com
Ph (312) 265-9474

scr.zacks.com 10 S. Riverside Plaza, Ste 1600, Chicago, IL 60606

Interleukin Genetics (ILIU-OTC)

ILIU: Metagenics Will Use PerioPredict in Benefit Plans. Maintaining Buy Rec

Current Recommendation	**Buy**
Prior Recommendation	Hold
Date of Last Change	03/28/2011
Current Price (02/24/16)	$0.07
Target Price	**$0.30**

OUTLOOK

Key UofM PST (periodontal disease) test study results were overwhelmingly positive and published in June 2013. PerioPredict launched in early 2014. Revenue has been immaterial but indications are that feedback from insurers, employer groups and patients is positive. Brought on new CEO, benefits consulting firm and revised strategy in early 2015 in order to help speed adoption of PerioPredict. Gameplan is to leverage evidence showing better dental care = lower medical costs. Company implementing 2-phased approach: target large self-insured employers for implementation into wellness programs and insurance carriers for coverage under new or modified plans. Adding personnel to facilitate strategy. New iron in the fire with collaboration with ISIS Pharma for use of Heart Health test. Other CVD relationships could follow. Another high potential pipeline test, for OA, also addresses increasing demand for personalized medicine and companion diagnostics – just signed agreement with NYU to develop and commercialize an OA test.

SUMMARY DATA

52-Week High	**$0.17**
52-Week Low	**$0.04**
One-Year Return (%)	**-59.38**
Beta	**0.80**
Average Daily Volume (sh)	**23,339**
Shares Outstanding (mil)	**173**
Market Capitalization ($mil)	**$11**
Short Interest Ratio (days)	**0.10**
Institutional Ownership (%)	**0**
Insider Ownership (%)	**44**
Annual Cash Dividend	**$0.00**
Dividend Yield (%)	**0.00**
5-Yr. Historical Growth Rates	
Sales (%)	**-9.2**
Earnings Per Share (%)	**N/A**
Dividend (%)	**N/A**
P/E using TTM EPS	**N/A**
P/E using 2015 Estimate	**N/A**
P/E using 2016 Estimate	**N/A**
Zacks Rank	**N/A**

Risk Level	**High,**
Type of Stock	**N/A**
Industry	**Med-Biomed/Gene**

ZACKS ESTIMATES

Revenue
(in '000s of $)

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2014	488 A	529 A	472 A	322 A	1,810 A
2015	403 A	376 A	296 A	310 E	1,385 E
2016					2,812 E
2017					5,839 E

Earnings per Share

	Q1 (Mar)	Q2 (Jun)	Q3 (Sep)	Q4 (Dec)	Year (Dec)
2014	-$0.01 A	-$0.01 A	-$0.01 A	-$0.01 A	-$0.05 A
2015	-$0.01 A	-$0.01 A	-$0.01 A	-$0.01 E	-$0.05 E
2016					-$0.03 E
2017					-$0.02 E

Zacks Projected EPS Growth Rate - Next 5 Years % **N/A**

© Copyright 2016, Zacks Investment Research. All Rights Reserved.

WHAT'S NEW…

Metagenics Will Utilize PerioPredict in Benefit Plans:

Interleukin announced last week that Metagenics will use PerioPredict in their employee benefit plans to help determine which individuals are most susceptible to developing periodontitis. This will not only provide additional guidance for most appropriate dental care but also, per ILIU's press release, act "as an access point to reduce their systemic inflammatory burden". Interleukin will provide the PerioPredict genetic testing as well as dental support to their dental providers. This agreement fits with ILIU's strategy of targeting employers (also targeting insurers) to encourage PerioPredict testing of individuals with chronic conditions such as CVD and type-2 diabetes as this is where the evidence shows more informed dental care can reduce medical costs.

As a reminder, a major study led by Dr. Marjorie Jeffcoat, Professor of Periodontology at the University of Pennsylvania School of Dentistry which evaluated the connection between periodontal disease treatment and medical costs, showed that individuals with chronic conditions (such as heart disease and type II diabetes) and completed treatment and maintenance of gum disease as compared to those that didn't had significantly lower medical and hospital-related costs (additional study info and ILIU's strategy to leverage this below).

While specifics of the agreement with Metagenics were not made public, it seems clear that they hope to use information provided by PerioPredict (i.e. – identify individuals at risk of periodontitis) as a part of their overall employee health plans to reduce health care costs (as well as employee down time).

Metagenics is a nutrigenomics company with a focus on chronic conditions and overall health. Per their website, they serve more than 75k healthcare providers with medical foods, nutritional formulas and lifestyle-solution programs. Interleukin has had a relationship with Metagenics for several years and in 2011 the duo entered a research collaboration to identify biomarkers to use with Meta-006, Metagenics' proprietary formulation of tetrahydro iso-alpha acids for use in weight management. Interleukin and Metagenics also share a board member.

Impact of Periodontal Therapy on General Health…

A major study led by Dr. Marjorie Jeffcoat, Professor of Periodontology at the University of Pennsylvania School of Dentistry evaluated the connection between periodontal disease treatment and medical costs.

The study looked at five years' worth of medical and dental records data from almost 339k patients. It compared the medical treatment and related costs of individuals that completed treatment and maintenance of gum disease with those that did not. Subsets included a.) diagnosis of at least one specified medical condition and b.) evidence of periodontal disease. Chronic conditions included cerebral vascular disease (stroke), coronary artery disease and type-2 diabetes. Results, which were published in 2014 in the American Journal of Preventive Medicine in an article titled *Impact of Periodontal Therapy on General Health* and presented by Dr. Jeffcoat at the American Association of Dental Research meeting in Charlotte that same year, showed that for individuals that completed treatment and maintenance of gum disease as compared to those that didn't had;

- annual medical cost savings of
  - almost $5,700 for those with stroke (41% reduction)
  - almost $1,100 for those with coronary artery disease (11% reduction)
  - over $2,800 for those with diabetes (40% reduction)
  - over $2,400 for women who were pregnant (74% reduction)

- annual hospital reductions of
  - 21% for those with stroke
  - 29% for those with heart disease
  - 39% for those with diabetes

All differences were statistically significant at $p<0.05$. The study also looked at those with rheumatoid arthritis although this population did not show a statistically significant reduction in medical costs.

Table 3 Chronic medical conditions: comparison of costs and hospitalizations

	Chronic systemic disease							
	Type 2 diabetes		**Cerebral vascular disease**		**Coronary artery disease**		**Rheumatoid arthritis**	
Periodontal treatment								
Total number of qualifying subjects in Year 0 (2005)	91,242		13,007		8,458		81,439	
ICD-9 codes for inclusion in cohort	250–25099, 3572–35729, 3620–36209, 36641, 6480		433, 434		411, 413, 414, 4292		7140, 7141, 7142, 71481	
Periodontal treatment received	Untreated	Treated	Untreated	Treated	Untreated	Treated	Untreated	Treated
Number in cohort	90,329	913	12,868	139	8,368	90	80,903	536
Percentage periodontally treated	1.0%		1.1%		1.1%		0.7%	
OUTCOMES								
Total medical costs								
Total medical costs per subject per year (mean 2006–2009)	$7,056	$4,216	$13,895	$8,214	$10,222	$9,133	$9,218	$8,637
Annual reduction with treatment	$2,840 (40.2%)		$5,681 (40.9%)		$1,090 (10.7%)		$581 (6.3%)	
Significance, Wilks's lambda	***p*<0.04**		***p*<0.04**		***p*<0.04**		NS	
Hospital admission								
Inpatient admissions per 1,000 subjects per year (mean 2006–2009)	66.6	40.4	444.4	350.0	65.2	46.6	142.7	136.3
Annual reduction with treatment	26.3	(39.4%)	94.4	(21.2%)	18.7	(28.6%)	6.4	(4.5%)
Significance, Wilks's lambda	***p*<0.05**		***p*<0.002**		***p*<0.01**		NS	

SOURCE: Jeffcoat, et al. AJPM. August 2014, Vol. 47, Issue2 Pgs 166-174

ILIU Leveraging This Data…

So to leverage this type of evidence that proper dental care can reduce medical expenses ILIU and EBCG are targeting both large employers who self-insure and insurance carriers. The initial focus, and likely the lower hanging fruit, is to encourage PerioPredict testing of individuals with chronic conditions such as CVD and type-2 diabetes as this is where the evidence shows more informed dental care can reduce medical costs.

ILIU and EBCG are dedicating most of their initial focus on employers as they believe the sales and adoption cycle may be quicker, given that there are less structural hurdles to overcome (as compared to insurance carriers which requires a modification to plans and have more red tape in general).

On the large-employer side, the value proposition is that PerioPredict can fit into wellness programs (similar to smoking cessation) – essentially that if employers sponsor (or perhaps co-sponsor with employees bearing some

of the cost) PerioPredict testing that this cost will be more than recouped in lower medical costs and less employee downtime and missed worked days. The employer then may coordinate with their dental carrier to modify coverage, if appropriate. This is expected to follow a “phased-in” approach whereby, for instance, wellness plans incorporating PerioPredict might initially target high-risk groups (such as those identified in the Jeffcoat study) and over time expand to a greater portion of the employee population.

On the insurance carrier side, ILIU and EBCG have had and continue to have discussions with various carriers in incorporating coverage of PerioPredict in their plans. As noted the insurance-carrier sales cycle is anticipated to be longer – management noted that carriers want to see data-driven pilot and demonstration programs to assess the potential benefits.

FINANCIAL MODEL

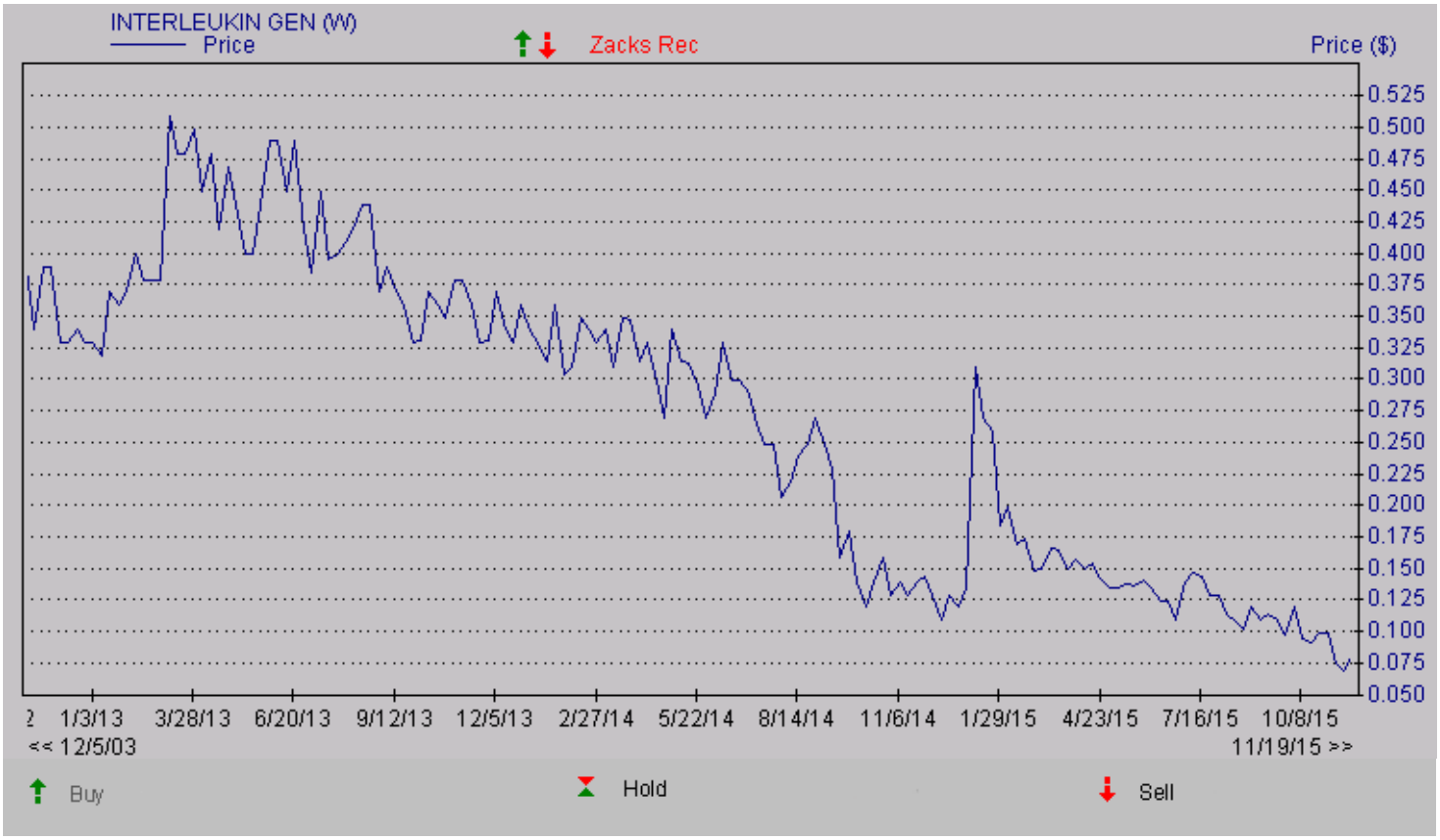
Interleukin Genetics, Inc.

	2014 A	Q1A	Q2A	Q3A	Q4E	2015 E	2016 E	2017 E	2018 E
Genetic testing	$1,641.5	$347.9	$324.8	$248.9	$287.0	$1,208.6	$2,730.0	$5,669.0	$7,207.0
YOY Growth	*-24.3%*	*-17.2%*	*-32.8%*	*-43.4%*	*-3.9%*	*-26.4%*	*125.9%*	*107.7%*	*27.1%*
Other	$168.8	$55.3	$51.2	$47.1	$23.0	$176.6	$81.9	$170.1	$216.2
Total Revenues	$1,810.3	$403.2	$376.1	$296.0	$310.0	$1,385.2	$2,811.9	$5,839.1	$7,423.2
YOY Growth	*-25.5%*	*-17.3%*	*-28.9%*	*-37.3%*	*-3.7%*	*-23.5%*	*103.0%*	*107.7%*	*27.1%*
Cost of Revenues	$1,435.4	$331.0	$331.6	$323.1	$303.8	$1,289.5	$2,148.3	$3,614.4	$4,305.5
Gross Income	$375.0	$72.2	$44.5	($27.1)	$6.2	$95.7	$663.6	$2,224.7	$3,117.7
Gross Margin	*20.7%*	*17.9%*	*11.8%*	*-9.2%*	*2.0%*	*6.9%*	*23.6%*	*38.1%*	*42.0%*
R&D	$843.1	$182.5	$384.5	$411.9	$412.0	$1,391.0	$1,404.0	$1,441.0	$1,552.0
% R&D	*46.6%*	*45.3%*	*102.3%*	*139.2%*	*132.9%*	*100.4%*	*49.9%*	*24.7%*	*20.9%*
SG&A	$5,767.2	$1,562.8	$1,655.2	$1,413.7	$1,515.0	$6,146.7	$6,218.0	$6,387.9	$6,762.5
% SG&A	*318.6%*	*387.6%*	*440.2%*	*477.6%*	*488.8%*	*443.7%*	*221.1%*	*109.4%*	*91.1%*
Amortization	$94.1	$19.4	$19.4	$19.4	$19.4	$77.7	$80.0	$80.0	$80.0
Operating Income	($6,329.4)	($1,692.6)	($2,014.7)	($1,872.2)	($1,940.2)	($7,519.6)	($7,038.4)	($5,684.3)	($5,276.8)
Operating Margin	*-349.6%*	*-419.8%*	*-535.7%*	*-632.5%*	*-626.0%*	*-542.8%*	*-250.3%*	*-97.3%*	*-71.1%*
Total Other income	($6.3)	($150.6)	($152.1)	($153.4)	($150.8)	($606.9)	($603.0)	($603.0)	($453.0)
Pre-Tax Income	($6,335.7)	($1,843.2)	($2,166.8)	($2,025.5)	($2,091.0)	($8,126.5)	($7,641.4)	($6,287.3)	($5,729.8)
Taxes	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Tax Rate	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Net Income	($6,335.7)	($1,843.2)	($2,166.8)	($2,025.5)	($2,091.0)	($8,126.5)	($7,641.4)	($6,287.3)	($5,729.8)
YOY Growth	*-10.2%*	*10.7%*	*37.4%*	*39.0%*	*27.7%*	*28.3%*	*-6.0%*	*-17.7%*	*-8.9%*
Net Margin	*-350.0%*	*-457.1%*	*-576.2%*	*-684.3%*	*-674.6%*	*-586.7%*	*-271.8%*	*-107.7%*	*-77.2%*
EPS (continuing ops)	($0.05)	($0.01)	($0.01)	($0.01)	($0.01)	($0.05)	($0.03)	($0.02)	($0.02)
YOY Growth	*-34.4%*					*-8.1%*	*-30.9%*	*-25.6%*	*-13.8%*
Diluted Shares O/S	123,768	172,738	172,787	172,841	172,880	172,811	235,000	260,000	275,000

Brian Marckx, CFA

© Copyright 2016, Zacks Investment Research. All Rights Reserved.

HISTORICAL ZACKS RECOMMENDATIONS



DISCLOSURES

The following disclosures relate to relationships between Zacks Small-Cap Research ("Zacks SCR"), a division of Zacks Investment Research ("ZIR"), and the issuers covered by the Zacks SCR Analysts in the Small-Cap Universe.

ANALYST DISCLOSURES

I, Brian Marckx, CFA, CFA, hereby certify that the view expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the recommendations or views expressed in this research report. I believe the information used for the creation of this report has been obtained from sources I considered to be reliable, but I can neither guarantee nor represent the completeness or accuracy of the information herewith. Such information and the opinions expressed are subject to change without notice.

INVESMENT BANKING, REFERRALS, AND FEES FOR SERVICE

Zacks SCR does not provide nor has received compensation for investment banking services on the securities covered in this report. Zacks SCR does not expect to receive compensation for investment banking services on the Small-Cap Universe. Zacks SCR may seek to provide referrals for a fee to investment banks. Zacks & Co., a separate legal entity from ZIR, is, among others, one of these investment banks. Referrals may include securities and issuers noted in this report. Zacks & Co. may have paid referral fees to Zacks SCR related to some of the securities and issuers noted in this report. From time to time, Zacks SCR pays investment banks, including Zacks & Co., a referral fee for research coverage.

Zacks SCR has received compensation for non-investment banking services on the Small-Cap Universe, and expects to receive additional compensation for non-investment banking services on the Small-Cap Universe, paid by issuers of securities covered by Zacks SCR Analysts. Non-investment banking services include investor relations services and software, financial database analysis, advertising services, brokerage services, advisory services, equity research, investment management, non-deal road shows, and attendance fees for conferences sponsored or co-sponsored by Zacks SCR. The fees for these services vary on a per client basis and are subject to the number of services contracted. Fees typically range between ten thousand and fifty thousand USD per annum.

POLICY DISCLOSURES

Zacks SCR Analysts are restricted from holding or trading securities placed on the ZIR, SCR, or Zacks & Co. restricted list, which may include issuers in the Small-Cap Universe. ZIR and Zacks SCR do not make a market in any security nor do they act as dealers in securities. Each Zacks SCR Analyst has full discretion on the rating and price target based on his or her own due diligence. Analysts are paid in part based on the overall profitability of Zacks SCR. Such profitability is derived from a variety of sources and includes payments received from issuers of

© Copyright 2016, Zacks Investment Research. All Rights Reserved.

securities covered by Zacks SCR for services described above. No part of analyst compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in any report or article.

ADDITIONAL INFORMATION

Additional information is available upon request. Zacks SCR reports are based on data obtained from sources we believe to be reliable, but are not guaranteed as to be accurate nor do we purport to be complete. Because of individual objectives, this report should not be construed as advice designed to meet the particular investment needs of any investor. Any opinions expressed by Zacks SCR Analysts are subject to change without notice. Reports are not to be construed as an offer or solicitation of an offer to buy or sell the securities herein mentioned.

ZACKS RATING & RECOMMENDATION

ZIR uses the following rating system for the 1210 companies whose securities it covers, including securities covered by Zacks SCR:
Buy/Outperform: The analyst expects that the subject company will outperform the broader U.S. equity market over the next one to two quarters.
Hold/Neutral: The analyst expects that the company will perform in line with the broader U.S. equity market over the next one to two quarters.
Sell/Underperform: The analyst expects the company will underperform the broader U.S. Equity market over the next one to two quarters.

The current distribution is as follows: Buy/Outperform- 26.0%, Hold/Neutral- 55.0%, Sell/Underperform – 15.3%. Data is as of midnight on the business day immediately prior to this publication.