

From: [John West](#)
To: [Richard Chen](#); [Carol Tillis](#); [Christian Haudenschild](#)
Subject: Draft Board slides for your comments
Date: Monday, June 11, 2012 10:20:24 PM
Attachments: [CEO Overview 12Jun2012 v1.ppt](#)

Rich, Carol, Christian,

I am attaching my Board slides as a draft. Please look through them if you get a chance, particularly the ones related to Complete Genomics.

Thanks,

John

Personalis, Inc.

CEO Overview

Board of Directors Meeting

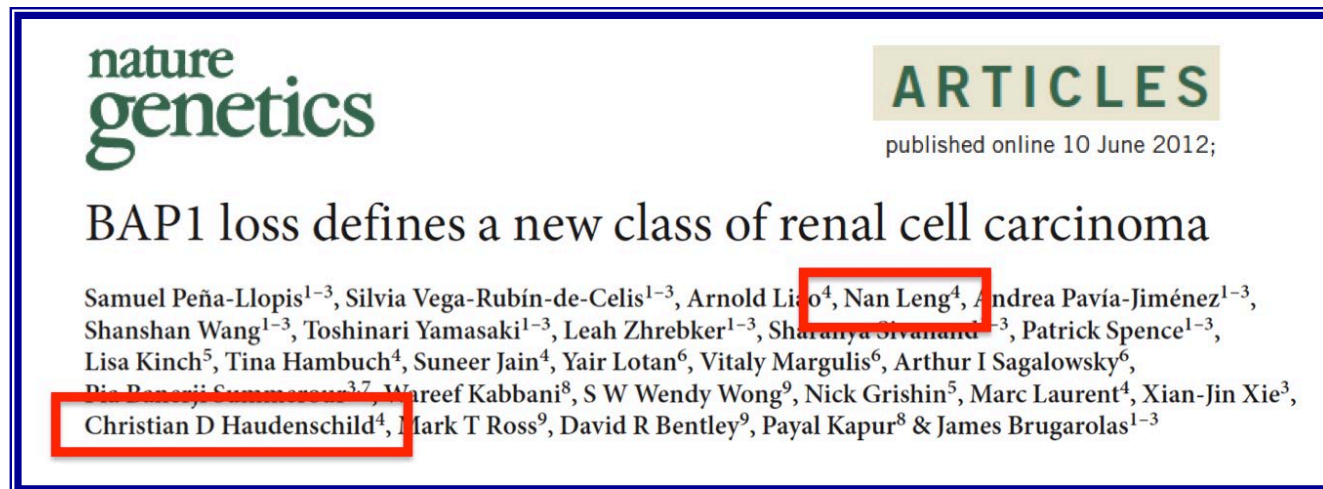
June 12, 2012

CEO Overview

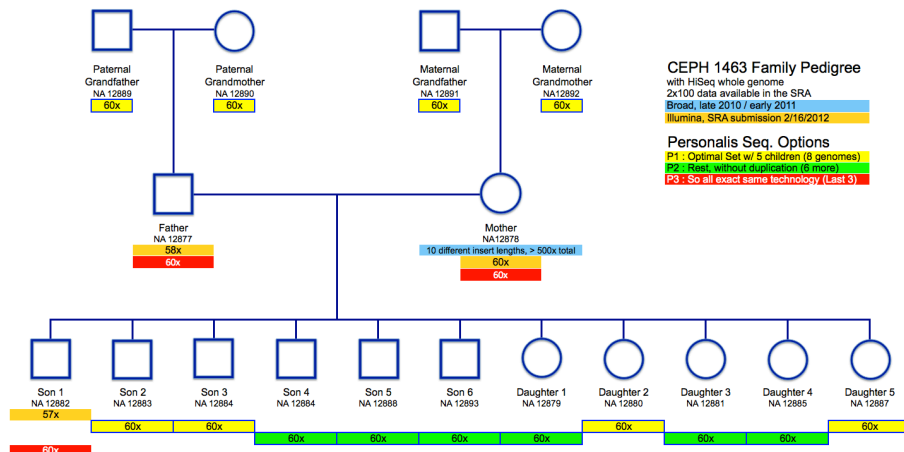
- Company retains focus on product for 1st revenue in 2012
 - Rich to present R&D planning & progress
- 5/31 ending cash above budget (Carol to review financials)
- Started move to new office & temporary lab (Carol to review)
- Completed IRB approval & contract with Stanford for Super-centenarian project, a model for future collaborations (Rich to review)
- Two new hires for June:
 - 1 Stanford bioinformaticist
 - 1 Illumina molecular biologist
- Publications & public presentations
- Personalis laboratory strategy (Capital Equipment purchase to approve)
 - Christian to present plans for Operations group
 - Includes development of CLIA / CAP, in parallel with RUO
- Strategy option re: Complete Genomics

Publications & Upcoming Presentations

- JW invited to speak at CHI “The Clinical Genome” meeting
 - June 13, San Francisco
- JW invited to speak at Institute of Medicine meeting
 - Washington, DC, July 17

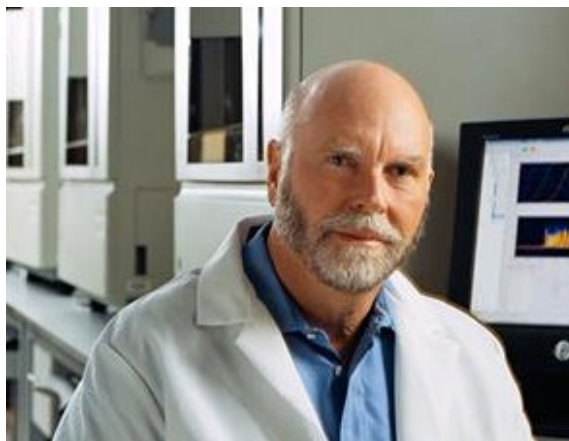


**Published with
Univ. Texas,
Southwest
Medical Center.
Based on work
prior to joining
Personalis.**



CEPH 1463 Pedigree

Dr. Craig Venter



Personalis Gold Standard Genomes Project

CEPH1463 3-generation pedigree with 17 people, already sequenced by Complete Genomics

Genome of Craig Venter, only “gold standard” (Sanger) genome ever

DNA received & transferred to anonymizing containers in Personalis temporary lab space

Illumina turn around 12 weeks, DNA has passed their incoming QC

Complete Genomics turn around time initially 16 weeks, potentially declining since their downsizing announcement

Personalis Laboratory Strategy

- **Laboratory goals:**
 - Direct relationship with the customer
 - Quality control, sample to results (important for research and later clinical)
 - Position as “Value-Added Genome”, not “a bio-informatics company”
 - Offer a superior genome, by combining technologies from multiple companies
 - Develop superior sample preps, esp based on Personalis content
- **Outsourcing:**
 - Whole genome sequencing service pricing now < reagents to do it yourself
 - Avoid infrastructure costs (instruments, initial computation, staffing)
 - Turn-around time is a disadvantage (quotes at 12-16 weeks)
 - Other assays we can outsource:
 - Arrays (standard & semi-custom)
 - Karyotyping
 - Exomes, RNAseq
- **Personalis lab**
 - Receive, de-identify samples
 - QC, sample tracking
 - Ship aliquots to multiple vendors
 - Validations following primary analysis
 - **Develop custom sample preps**

Personalis Confidential May 8, 2012

Illumina's service offering is less flexible than originally thought:

**Whole genome only (no exome)
Only 2 x 100 reads on 300 base
fragments
30x, 60x or 90x**

Long term they could decide to be more flexible, but they just shut down their Hayward lab, which accommodated some semi-customization

This provides more near-term opportunity to offer improvements, initially based on straightforward operational parameters, then increasingly based on Personalis proprietary content

Potential structure for Personalis' Clinical Genome Sequencing (RUO)

- Competitive offerings (ILMN, GNOM) are based on single insert-length paired end sequencing, just with 2x more coverage (e.g. 60-80x vs 30-40x)
- Potential Personalis offering, 3 “Layers”:
 - Outsourced base:
 - 30x at standard (300bp) paired-end insert lengths (2 x 100-150)
 - Provides sufficient coverage for most SNP detection, at low cost
 - Mid-tier, in house:
 - 3-10x each at 600 & 1200 bp paired-end lengths
 - Key for addressing alignment degeneracy
 - May be optimized by content-driven pullout
 - Top tier, in house:
 - Specialty assays including:
 - Longer reads (e.g. 2 x 250-400)
 - Very long insert paired-ends
- Target positioning:
 - Higher accuracy, even before the data interpretation
 - Priced at a premium but not in the stratosphere
 - BMW, not Lamborghini



HiSeq 2500/1500

600-700 G-bases / run at 2x100
5 genomes at 30x for \$20k reagents
Approx \$30 / G-base
11-12 days / run
Should reach 1T-base/run by YE 2012

Personalis uses:

Larger, semi-custom runs
e.g. 10x on 1,200base paired-end inserts

Starting customer projects faster



MiSeq Personal Sequencer

6-7 G-bases / run at 2 x 250
1-2 days / run
Approx \$170 / G-base
\$600-\$1,200 reagents / run

Personalis uses:

Specialty focused assays & the longest read lengths

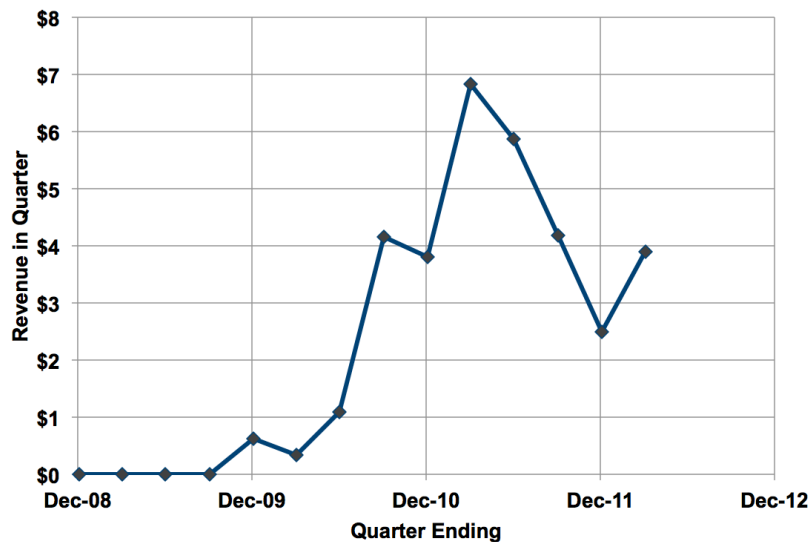
Screening libraries for the HiSeq

Our Feb 2012 CapEx budget called for just the MiSeq (at \$200k), since HiSeq was \$750k. Illumina is now proposing both for \$620k. This would be a good combination for us, accelerating the start of our “full-service” business. Requires Board approval.

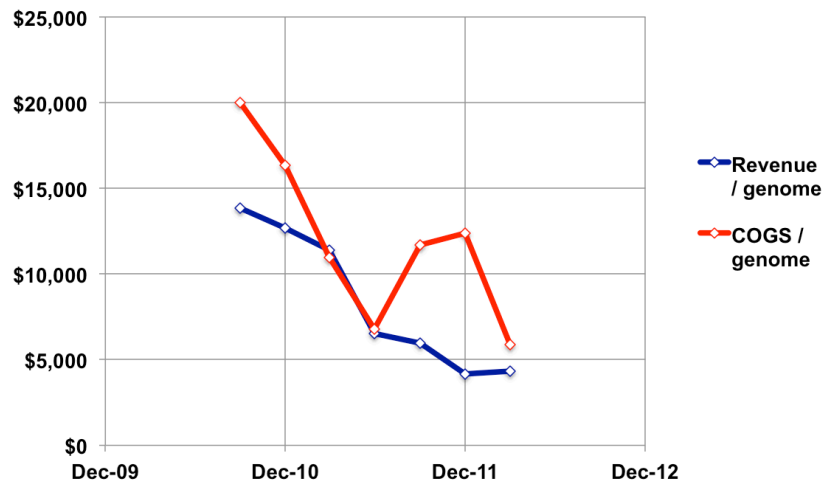
Complete Genomics

- Started June 2005 (late, relative to competitors 454, Solexa & SOLiD)
- CEO & much of management had little prior experience in life sciences (wireless)
- Novel technology best suited to very large-scale, so focused on whole human genomes (currently < 5% of the DNA seq market, though projected to grow)
- Complexity (esp sample prep & informatics) and late market entry, led to decision to offer only a service (traditionally < 5% channel for platform companies)
- Venture financed, 5 rounds, \$147M
- Nasdaq IPO (GNOM) at \$9 / share, after 1st significant revenue (Q3 2010, \$4.2M)
- Follow-on private placement June 2011 at \$12.50 / share
- APIC 3/31/2012 \$295.8M
- Undercut market leader Illumina: Prices dropped 70% in 15 months
- Revenue peaked mid-2010, still 30x smaller than Illumina
- Sample prep problems in factory closed lab in late 2010, now open but still struggling
- Stock dropped 90% from mid-2010 peak
- Cash graph extrapolates to zero at end of 2012.
- Last week: Jeffries & Co (investment bankers) hired to identify “strategic alternatives”
- Shareholder meeting June 22nd

Complete Genomics Quarterly Revenue History (\$M)



Complete Genomics Realized Pricing: Below COGS

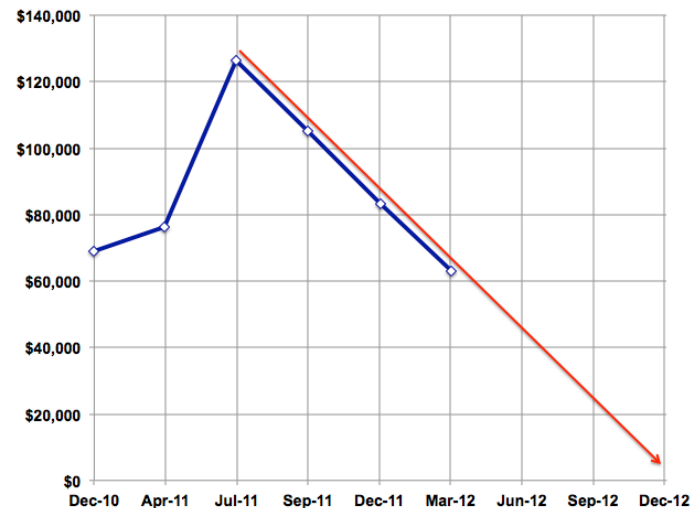


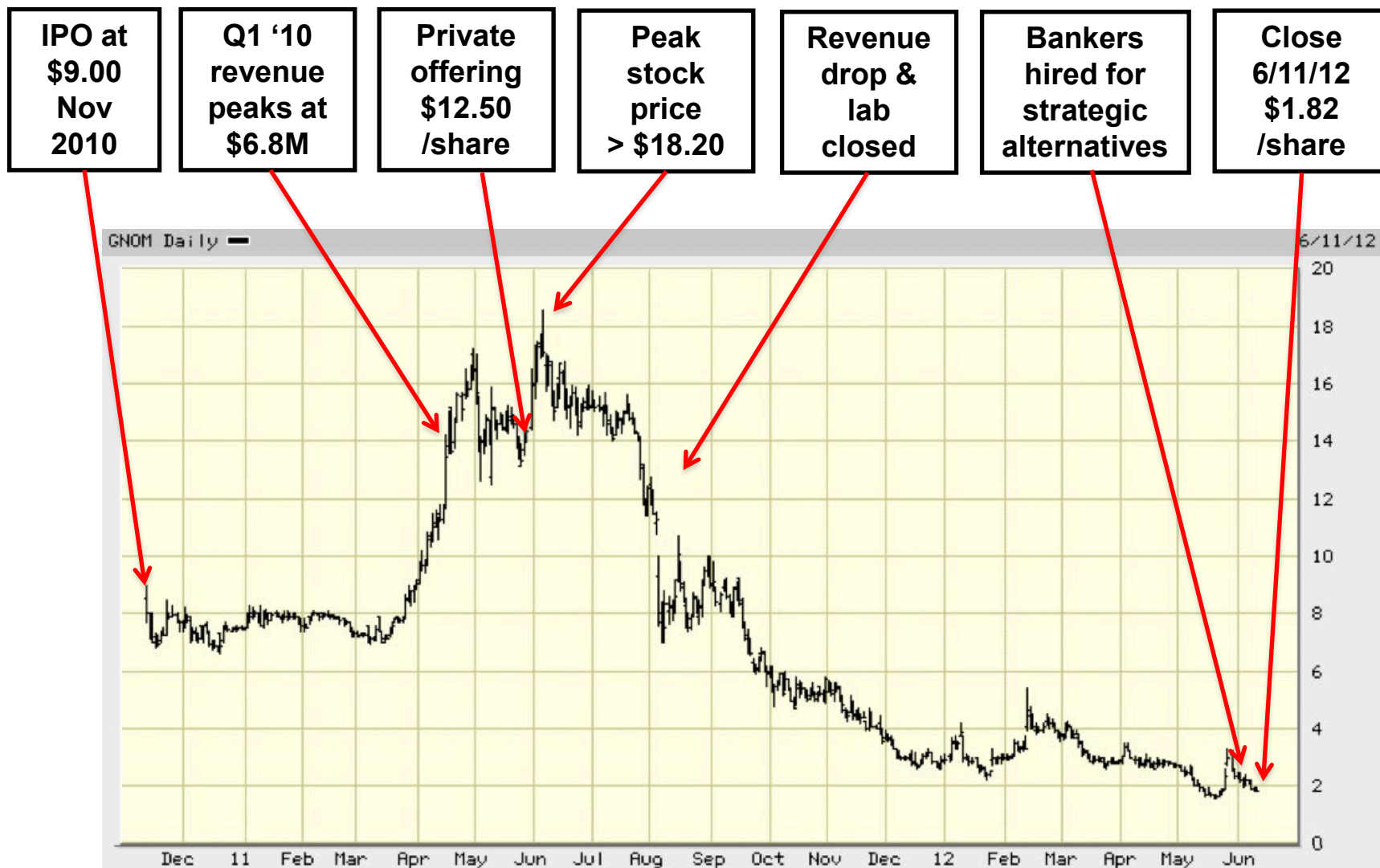
Key Competitor Comparison : Illumina
Q1 2012 Revenue: \$270M (> 65x larger)
Gross margins > 66%

Complete Genomics Quarterly Revenue (All)

Quarter Ending	Revenue			COGS		Backlog		
	(\$M)	Genomes	\$/Genome	(\$M)	\$/Genome	Dollars (\$M)	Genomes	\$/Genome
3/31/12	\$3.900	900	\$4,333	\$5.298	\$5,887	\$27.0	5,700	\$4,737
12/31/11	\$2.500	600	\$4,167	\$7.423	\$12,372	\$28.0	5,800	\$4,828
9/30/11	\$4.177	700	\$5,967	\$8.182	\$11,689	\$24.0	4,800	\$5,000
6/30/11	\$5.865	900	\$6,517	\$6.122	\$6,802	\$12.0	2,200	\$5,455
3/31/11	\$6.833	600	\$11,388	\$6.582	\$10,970	\$15.0	2,000	\$7,500
12/31/10	\$3.803	300	\$12,677	\$4.903	\$16,343	\$10.0	1,000	\$10,000
9/30/10	\$4.161	300	\$13,870	\$6.007	\$20,023	\$9.0	800	\$11,250

Complete Genomics: Cash, Equivalents & Short Term Investments





Complete Genomics share price history (19 months, IPO to Present)

Complete Genomics Assets of Potential Interest to Personalis

- Experience sequencing (and access to the data of) > 4,000 human genomes, to high coverage
- Experience with cancer genomes (a gap at Personalis)
- Computing facility: 7,500 cores, 4 Petabytes (\$10M investment)
- Relatively advanced bioinformatics pipeline
- IP : DNA nanoballs on a semiconductor grid, might be used with Solexa / Illumina biochemistry
- \$27M backlog (some expected to evaporate, but probably not all)
- Tax-loss carry-forward: \$231M
- Nasdaq listing
- Some commercial infrastructure
- After laying off 55 last week, about 200 employees in Mountain View
- Anticipate CLIA certification in 2012

Personalis Assets of Potential Interest to Complete Genomics Shareholders

- Far ahead regarding interpretation of human genome sequences
- Personalis CEO :
 - Ran the DNA sequencing platform business which became #1
 - Raised \$100M in Solexa public financings & has good relationships with numerous public investors
 - Reversed into a Nasdaq listed but troubled DNA sequencing company (Lynx) and made it part of the Solexa success (dropping Lynx sequencing chemistry but leveraging other Lynx experience & IP)
 - Sold Solexa at a major gain to shareholders (including Lynx's)
 - Relationship with Illumina management
- Personalis academic Founders & several ex-Stanford employees:
 - Have good working relationships with Complete
 - Could bring additional scientific & medical genomics credibility
- Investors with the potential to support a plan, if solid
- Personalis could be a real “strategic alternative” (vs the usual investment banking meaning of this phrase)

Potential Business Approach

- Reverse Personalis into Complete to become a Nasdaq-listed company
- Structure to maintain (most of ?) the tax loss carry forward
- Replace much of Complete's management, including CEO, but retain key customer interfaces with deep life sciences background
- Negotiate an end to IP litigation with Illumina, potentially including an investment by Illumina and some cross licensing
- Discontinue use of Complete's sequencing biochemistry, but look at use of Illumina biochemistry on Complete's DNA nanoballs ("hybrid") and/or just move to HiSeq's
- Stop development of sequencing instruments, biochemistry and related informatics at Complete. Cut other costs, including office space excess
- Convert backlog to Illumina platform or the Illumina / Complete "hybrid"
- Focus the company on medical genome sequencing, combining Personalis non-cancer expertise with Complete's cancer genome experience & deep genome data set. Position for premium pricing.
- Finance the company & achieve liquidity for Personalis investors

COMPLETE GENOMICS, INSTITUTIONAL INVESTOR ANALYSIS

Investor Organization or Group	Board Representative 6/7/12	Shares Beneficially Owned				Former Solexa Investor ?
		Number		Percent		
		4/29/11	4/24/12	4/29/11	4/24/12	
OrbiMed	Carl Gordon, resigned from BoD 6/7/2012	4,450,649	4,450,649	14.0%	13.0%	\$5M 11/05
Essex Woodlands	Dr. Thomas Caskey, MD, Adjunct Partner	4,450,649	4,450,649	14.0%	13.0%	No
Prospect Ventures	Dr. A. Barkas, deceased Dec. 2011	3,180,255	3,180,255	10.0%	9.3%	No
Enterprise Partners	Dr. A. Senyei, General Partner, Ent. Ptnrs.	3,004,517	3,104,517	9.5%	9.1%	No
Highland Capital	None	2,671,362	2,744,880	8.4%	8.1%	No
OVP Venture Partners	Charles P. Waite, Jr., General Partner OVP	2,893,390	Not on 2012 list	9.1%	Not on 2012 list	No
Stephens Inv. Mgmt.	None	Not on 2011 list	1,756,671	Not on 2011 list	5.2%	\$7M 11/05
SCV-CG LLC	None	1,440,624	Not on 2012 list	4.5%	Not on 2012 list	No
		22,091,446	19,687,621	69.5%	57.7%	
Total, All Common stock outstanding		25,922,627	33,704,334			
Employee stock options		2,869,747	4,101,953	11.1%	12.2%	

Next : VP Finance report