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GSK's Acquisition of Sirtris: Independence or Integration?

In the summer of 2008, Moncef Slaoui, GlaxoSmithKline's chairman of research and development, was wrestling with a complex challenge that could determine the success of the company's efforts to improve efficiency and speed up the output of breakthrough products at the giant pharmaceutical company. In April 2008, GlaxoSmithKline (GSK) had spent \$720 million to acquire Sirtris Pharmaceuticals, a Massachusetts-based biotech company that specialized in the discovery of drugs to treat diseases associated with aging. Sirtris's expertise in sirtuin activators could potentially lead to several major new drugs, but perhaps just as important for GSK was Sirtris's entrepreneurial culture and development approach that Slaoui hoped could become a model for the rest of GSK. His challenge was to integrate Sirtris into GSK and "infect" the larger organization without allowing GSK's size and bureaucracy to destroy the entrepreneurial dynamism of Sirtris or drive away the scientists he hoped would develop one of GSK's most valuable scientific platforms.

Christoph Westphal, co-founder and CEO of Sirtris, shared Slaoui's concerns about preserving the intangibles that made Sirtris special. In the few months since the acquisition, Westphal and Michelle Dipp, the leader of the merger integration effort at Sirtris, had already seen the demands of being a subsidiary of GSK eat into their time and make life at Sirtris a little less flexible. Moreover, a small number of scientists had left Sirtris to help launch other start-ups. While these scientists quickly had been replaced by other talented individuals, it was not clear whether the sale to GSK had influenced their departure. Still, Westphal believed that the decision to sell to GSK was the right one for Sirtris. In addition to the sizeable premium for shareholders, the deal would provide Sirtris with drug development and commercialization capabilities the organization would need if its efforts in its research labs bore fruit. As CEO, his role was to allow Sirtris to continue to be productive while also taking advantage of the strengths of GSK and meeting GSK's needs as the corporate parent. In the months ahead, both Slaoui and Westphal recognized that whether and how these goals and interests were managed would determine GSK's ability to deliver shareholder value on its investment—and the future of Sirtris.

Professor Toby Stuart and James Weber, Senior Researcher, Global Research Group, prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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GSK Background

GSK, one of the world's largest pharmaceutical companies, was formed in the 2000 merger of GlaxoWellcome and SmithKline Beecham. Headquartered in the U.K., GSK earned 2007 sales of £22.7 billion (85% pharmaceutical products and 15% consumer products) and employed 100,000 workers, including 16,000 in R&D, in over 100 countries. The company had significant drugs in eight therapeutic areas. (See **Exhibits 1, 2, and 3** for selected GSK financial data, **Exhibit 4** for currency exchange data, **Exhibit 5** for sales by therapeutic area, and **Exhibit 6** for employee data.)

Sirtris Background

Sirtris Pharmaceuticals was a biotechnology company that was conducting research into sirtuins, proteins that were involved in the aging process, in the hopes of developing drugs that could treat diabetes and many other diseases associated with aging. David Sinclair, a Harvard scientist who had spent a decade researching sirtuins, and Christoph Westphal, a Harvard M.D.-Ph.D., former venture capitalist, and cofounding CEO of four other biotech companies, two of which he had taken public, formed Sirtris in 2004. The pair took the company public in May 2007 at an initial price of \$10 per share.

GSK Begins to Reform R&D - CEDDs

Upon the formation of GSK in 2000, then CEO Jean-Pierre Garnier and Slaoui's predecessor as head of R&D, Tadataka Yamada, sought to reform the drug discovery process at the company. Prior to the merger both companies—like many others in the pharmaceutical industry—had matrix structures, where, for example, a biologist focused on cardiovascular research reported to a central biology department and also to the head of the cardiovascular therapeutic area. The merging companies also had similar, centralized processes for deciding which projects moved through the discovery and development pipeline. Such decisions were made by a committee reporting to the head of R&D. The committee consisted of the R&D functional heads, which included genetics research, discovery research, toxicology, clinical pharmacology, pre-clinical development, clinical development, and regulatory affairs. The committee met monthly to determine which projects should be funded and which abandoned.

Like many of its peers in the industry, however, GSK was struggling to develop important new medicines under this organizational model. Yamada believed that the poor R&D productivity was caused by excess bureaucracy, poor internal communication, and a lack of entrepreneurialism within the company. To turn this around, he reorganized GSK's drug discovery scientists into six Centers for Excellence in Drug Discovery (CEDDs). Yamada hoped that the CEDD organization would improve productivity by leveraging the strengths of a large pharmaceutical company with the creativity and nimbleness of a biotech.

Yamada grouped therapeutic areas into CEDDs based on similarities in known disease mechanisms. For example, many respiratory illnesses also involved inflammation responses so these two areas were grouped into a CEDD. Each CEDD controlled a budget and owned the decision of whether to move a project forward or to cut funding. Each CEDD would have no more than 350 scientists. Yamada believed it was important to keep the CEDDs relatively small to reduce bureaucracy and to facilitate day-to-day contact between any two scientists.

The CEDD reorganization seemed to be working for GSK. Between 2000 when it began the reorganization and mid-2008 the company increased the number of products it had in late-stage development from two to 34 and, on this metric, went from being at the low end of the industry to the top.¹

Slaoui Continues the Revolution

Moncef Slaoui held a PhD in molecular biology and immunology. He joined a predecessor to GSK in 1988 as a vaccine scientist and eventually became R&D head of vaccines. Slaoui recalled, “The vaccine organization was very small when I joined it and was often ignored by its corporate parent. Many times they considered selling the business and many times it was interfered with when they tried to control it from the center. We tried very hard to keep our independence.” This experience stayed with him as he rose to higher positions within GSK until he was named to his current position in mid-2006. He continued:

I could see how a big company by trying to do something good can totally destroy the energy, the drive, and the passion that scientists need to have to achieve what is a very challenging task – to discover a drug or vaccine. The discovery and creativity of something big must be nurtured. Proper conditions must be allowed to happen, but not controlled too much, not structured too much. But at the same time, people must be extremely clear about what their expectations are and be accountable for them.

Slaoui and Andrew Witty, who became CEO in May 2008, both believed that the changes in R&D moved the company in the right direction, but that they did not take it far enough. In mid-2008, Witty and Slaoui launched change initiatives aimed at further catalyzing the R&D organization. Their plan would change the way scientists worked, the company’s recognition and incentive programs, and the capital budgeting process in R&D. Many of these initiatives were captured in Slaoui’s three guiding principles: performance culture, high-quality decision-making, and the best science.

Performance Culture

The first principle was to institute a performance culture within R&D by pushing accountability down to the scientists in the labs. To this end, in July 2008 GSK began to form Discovery Performance Units (DPUs), which would be smaller organizational entities that would (with a few exceptions) be nested within CEDDs. DPUs would have a narrower focus than CEDDs. For example, a typical DPU might conduct research on a single drug target or biological pathway. Slaoui explained that part of the idea behind DPUs was to “re-personalize” research:

In the 1980s, pharmaceutical companies saw how profitable new drugs could be. To increase profits, they tried to scale up R&D by industrializing it. We created huge departments where we gave scientists very small tasks that they could perfect doing and then pass the results on to the next scientists to do the next task because that is how we knew to scale up industrial processes. We treated it like a manufacturing process and applied Taylorist concepts.

I think this was a big mistake. We killed one of the essential elements to real discovery, which is integrative thinking. In medicines you have a huge amount of biology knowledge,

¹ Jean-Pierre Garnier, “Rebuilding the R&D Engine in Big Pharma,” *Harvard Business Review*, May 2008.

chemistry and physics knowledge, and formulations and toxicology all integrated into a molecule. The same integrative thinking and integrative processes must go into the discovery of that molecule.

Although the creation of the CEDDs had improved the discovery pipeline at GSK, the CEDDs were still large, some had geographically dispersed staff, and researchers within CEDDs simultaneously worked on several projects. Patrick Vallance, GSK's senior vice president of drug discovery, explained, "CEDDs were big. They were in many ways traditional in terms of the drug discovery paradigm. They were also lacking in focus because they covered broad therapeutic areas and they were assessed against standard metrics." DPUs, conversely, ranged in size from 10 to 80 people and their entire staffs were co-located. Further, researchers within DPUs focused on a single area of science. Slaoui continued:

What we are doing with the DPUs – I call it small is beautiful in R&D – is to recreate the intimacy, the closeness of thinking, the informal interactions and communication through which creativity nurtures itself and a spark comes at some moment. It is having small teams, 30 to 40 is preferred, and everyone working in the same place. It is having all the various scientific disciplines together and giving them a very finite question.

Within a short time of forming the DPUs, Witty indicated that he had already seen what he viewed as positive change in the labs. In a quarterly conference call with investors he provided two examples:

Two weeks ago I was in one of our discovery labs.... Somebody came up to me and said, Andrew, I know there is a lot of change going on. It is so much better. Everybody I need to work with is in this lab.... I don't have to go to America....

I walked into [another] lab. There were two scientists, two benches. Both had experiments set up. [I asked one scientist] What is your experiment today? And she said, well, I was going to do ABC, but his experiment just came back positive 20 minutes ago. So I'm stopping everything and we're going to just work on that.

So that is exactly what I want. There was no memo sent, no anything.... Suddenly the critical path moves. You just move your resources to chase after that next opportunity. It's exactly what it is like in a hothouse biotech.²

Vallance explained that the DPU became "the basic building block of drug development" and GSK soon had created more than 20 DPUs. Organizationally, a few DPUs were stand-alone units that reported directly to Vallance, but in most cases, the DPU head reported to a CEDD president who reported to Vallance. Following the introduction of DPUs, CEDD organizations consisted of just a small leadership team made up of the DPU heads and a few other executives; nearly all other CEDD personnel sat within associated DPUs. (See **Exhibit 7** for organization chart.)

² "Event Brief of Q2 2008 GlaxoSmithKline Earnings Conference Call – Final," Voxant FD (Fair Disclosure), July 23, 2008, accessed through Factiva October 29, 2008.

High Quality Decision Making

To force accountability into the DPUs and to help ensure that GSK invested its research dollars wisely, Slaoui, Vallance and Witty had set up several groups to guide the resource allocation process within the company. The most significant of these groups was the Drug Discovery Investment Board (DDIB). This board decided which DPUs received funding and how much. The DDIB included both internal and external people. The outsider DDIB members included a banker, the CEO of a (non-GSK-owned) biotechnology company, a world-renowned scientist, and a partner in a leading venture capital firm. It also included an expert from the reimbursement side of the UK healthcare system to provide a perspective on what medicines governments would be likely to reimburse. GSK people on the DDIB included the head of business development and finance, the head of drug development, Vallance and Slaoui.

As part of GSK's newly revamped budgeting process, each DPU would be required to put together its own business plan and request for funding for a *three*-year period. These requests often reached well into the nine-figure range. The funding requests needed to include a strategy for what the DPU was trying to accomplish, a description of the team, and a clear set of milestones. Free-standing DPUs submitted their plans directly to the DDIB while the DPUs within a CEDD competed against one another for money from the same pot, which would be doled out by the DDIB to the CEDD leader.

The DDIB reviewed the funding requests of all DPUs at the same time so that it could make tradeoffs on capital allocation. In 2008, this process took approximately three months. Slaoui described the thinking behind the process:

In the past, this year's budget was typically last year's budget plus a bit more. You got your money and did whatever you did. The new system will eliminate any notion that you are entitled to the money. You have to convince the investment board that you have a good plan. To help reduce our own internal biases and also to bring in diverse views we bring in some outside experts to help us. We review your plan and we might fund all of it, we might fund some of it, or we might fund none of it in which case you disappear. We might even give you more money if we think you are on to something extraordinary.

Witty believed that the DDIB process was unique in the industry. He noted that the DDIB controlled a significant portion of GSK's overall R&D budget. GSK spent roughly half of its R&D budget on research and most of this was divided amongst the DPUs.

In addition to the DDIB, the CEDDs and DPUs would create their own panel of external scientific experts. For example, after the acquisition of Sirtris, Westphal immediately sought to retain the counsel of all of the company's key scientific advisory board members. (See **Exhibit 8** for scientific advisory board members.)

The Best Science

GSK, and pharmaceutical companies generally, faced the problem of how to develop and retain top scientific talent. Slaoui believed that GSK hired top-quality people from universities. Many of these scientists did good work for several years, but then began to look for advancement in their careers. Slaoui explained:

Until now, the best way for scientists to advance was to become remote from the science – they either moved into management or they moved from one scientific area to another to get a breadth of knowledge. Over time, we end up with quite a large population of scientists that have a lot of experience and a lot of breadth, but little depth. In discovery it is depth that is more important. It is about expertise or what I call “educated intuition” which is a mix of your knowledge and your intuition. You need to be a deep expert for that intuition to be more likely true than false.

This hypothesis led GSK to take several steps. First, Slaoui attempted to shift the discourse within the discovery organization from management to scientific topics. One way he did this was to expand the number of scientific seminars the company hosted. These were designed to attract world-class scientists from outside GSK to share their research with the firm.

To help focus its research efforts in the highest payoff areas, GSK conducted a large review of the basic science across therapeutic areas in an effort to identify areas that were “ripe for discovery”. They sought to identify select areas in which researchers had gained enough insight to begin to develop new classes of drugs in the next decade. The effort to pinpoint promising areas of science was one of the factors that led GSK to sirtuins and then to Sirtris Pharmaceuticals. Witty further explained this thinking, “We look to conduct research at the intersection of where we believe there is unmet medical need and areas where we can most likely deliver a potential breakthrough.”

Witty and Slaoui also revamped career ladders for scientists. Previously scientists could advance through management ranks and through technology ranks, but technology advancement was not as rapid or as rewarding as was the management track. Slaoui explained:

We have about 15 different grades that define your salary and sometimes your title. For managers it was director or vice president or senior vice president. Before, if you were a scientist and you might almost be a Nobel Prize winner you might be reaching the director’s level. But if you were a good talker and had some business sense you could be a senior vice president. What we do now is have these two ladders that are absolutely equivalent. You could be a scientist with a very small team, or perhaps no one reporting to you, and be a senior vice president.

The dual career ladders enabled GSK to recognize scientists through job titles and equivalent pay scales that put them on par with management. GSK took other steps to recognize the importance of scientists. Slaoui continued:

For many scientists, professional recognition is as important as, or even more important than, financial rewards. One way they are recognized at GSK is to have them around the table when key decisions are being made. This is not done in a mock way; we seek out and listen to their advice at the very senior levels in the organization where the final decisions are being made. To those scientists that are the real experts, I believe this is more important than salary.

GSK also encouraged its scientists to take some portion of their time, perhaps 10% to 20%, to pursue research topics of particular interest to them or to attend outside conferences. These activities could be unrelated to their primary work at GSK, but they frequently involved exploring basic research areas at the forefronts of their fields. Scientists were able to publish their research, though in some instances GSK might seek a patent based on the work.

Witty and Slaoui firmly believed that to increase their odds for success in research they needed to pursue research using a wide variety of methods and sources. So in addition to creating DPUs, GSK

planned to eventually externalize as much as 50% of its discovery funding. Some of these funds would be spent using outside service providers in areas such as formulation, toxicology studies, and pre-clinical animal models, that offered lower costs, faster turnaround times, or more advanced technologies. The choice of whether to use GSK's internal service providers in these areas or to rely on external vendors would be left to the discretion of the DPU.

Finally, GSK had two DPU-like organizations that would focus on gaining access to external science. First, the "academic incubator" unit sponsored research partnerships with universities. For example, it created two partnerships with Harvard, one for inflammation and the other for stem cell biology. As Slaoui explained, "This allowed our internal scientific community to embed itself with the outside world working at the cutting edge to keep us at the forefront of knowledge." Second, the Centre of Excellence for External Drug Discovery's (CEEDD) mandate was to screen and structure licensing agreements for promising compounds or scientific discoveries that were developed by biotechnology firms. Witty summarized:

Our goal is to have a very externalized discovery environment driving a diverse range of discovery approaches. No one knows where the next great drug is going to come from. You not only have to have a lot of discovery, but you need to have diversity of discovery. We want diversity not just of targets, not just of chemistry; we want diversity of discovery mentality. Chinese discovery is different from West Coast American and biotech is different from big pharma. I want to see a company that has a portfolio of very diverse, small laboratories all working in parallel.

GSK Acquires Sirtris

GSK and Sirtris engaged in an off-and-on dialog for several years regarding some form of collaboration between the two companies. In the spring of 2008, GSK expressed an interest in acquiring Sirtris. At the time, Sirtris's stock was trading in the vicinity of \$12 per share. After a few weeks of intensive due diligence and negotiations, GSK offered \$22.50 per share to acquire Sirtris. (See **Exhibits 9, 10, and 11** for Sirtris financial data and **Exhibit 12** for Sirtris stock price history.)

Slaoui and Witty saw several benefits in the Sirtris acquisition. In the announcement of the acquisition, Slaoui stated, "Modulation of this family of enzymes (sirtuins) is a potentially transformative science.... This acquisition continues GSK's strategy of pursuing the best new science, externally or internally.... Our intent is to retain all Sirtris employees and continue the entrepreneurial and innovative culture they created."³ In July, Witty added:

When you make an acquisition of a company like Sirtris you are making a value equation on a belief, actually, more than anything else, but hopefully a well-informed belief based on evidence. The belief is that the platform is going to be a potential fertile ground for a portfolio of products. Most biotechnology companies sell themselves when they have a one-product story. If we are right then this is a platform for multiple drugs. This is a very binary type investment because if we are wrong we might get nothing, but this is exactly the type of thing that a company like GSK should have in its portfolio.

³ GSK press release, "GlaxoSmithKline Acquires Sirtris pharmaceuticals, Inc., A World Leader in Sirtuin Research and Development," June 6, 2008, GSK web site, http://www.gsk.com/media/pressreleases/2008/2008_pressrelease_10060.htm, accessed December 25, 2008.

At the time of the acquisition, GSK leaned against directly integrating Sirtris. The company had just begun creating DPUs with the idea of giving them autonomy to do their research and Witty, Slaoui, and Vallance viewed Sirtris as a ready-formed DPU. Sirtris also had exactly the type of culture that GSK was trying to cultivate. In fact, Witty added that Sirtris “creates an internal benchmark for us. How do we (GSK) know when we have arrived at where we want to get to in our internal changes? When we look more like Sirtris.”

Vallance described another benefit to the acquisition:

While Sirtris will remain a stand-alone DPU, it can still pull on resources for drug discovery that it did not have before. For example, GSK has cutting edge capabilities in high-throughput screening, in drug formulations to produce drugs that can be taken orally over many years, and in many other areas. By making Sirtris part of GSK, we have increased the probability that it will come up with a range of valuable molecules.

Witty also highlighted the value of having someone like Westphal at GSK. He explained, “After the transaction we saw an opportunity to work with Christoph and to bring in the skills, judgment, and entrepreneurialism he has into some of our decision making at GSK. While Christoph clearly stood out to us, Sirtris had a number of other exceptional people that we wanted to retain.”

Westphal knew that, although many CEOs of acquired companies left at the time of the acquisition or shortly thereafter, he wanted to stay involved. He strongly believed in the science Sirtris was doing and stated, “This is likely to be the most important thing I do in my life.”⁴

Westphal’s commitment to remain involved with Sirtris and GSK was reflected in his agreement with GSK. His employment contract with Sirtris provided him with stock options and restricted stock awards that vested on a schedule stretching out to 2011. His contract included a standard clause, however, that entitled him to fully accelerated vesting in all options and restricted stock units in the event of a change in control at the company. As part of the acquisition negotiations, Westphal agreed to work for GSK and to modify his contract with Sirtris. His new agreement allowed GSK to hold back 25% of the payments he was entitled to under the Sirtris contract. The amount held back would be paid to Westphal over a four-year period if he remained with GSK. Westphal also insisted that GSK give all Sirtris employees the same deal they were giving him. (See **Exhibit 13** for excerpts from the holdback clause and **Exhibit 14** for ownership interests of four key Sirtris employees at the time of the acquisition.)

Westphal Sees Some Challenges

Although Westphal believed that the GSK acquisition of Sirtris was in the best interests of Sirtris shareholders, he did have concerns about the implementation of the acquisition and how GSK’s size and bureaucracy might impact Sirtris. He knew that acquisitions—especially those of entrepreneurial companies by large organizations—did not always go well once the initial excitement died down. Shortly after the acquisition, some of Westphal’s concerns began to materialize. These included heavy demands on his time and that of his key people, GSK’s human resource policies that undermined his ability to make hiring, firing and compensation decisions, and on a variety of “other little things” that impacted the culture and spirit at Sirtris. In response, Westphal and Dipp allocated some time in their

⁴ Todd Wallack, From Casual to Contractual; Acquisition of Sirtris Developed After Years of Talks,” *The Boston Globe*, June 6, 2008, accessed through Factiva October 29, 2008.

weekly, Saturday morning meetings to document their views of the situation and share them with Slaoui and Vallance. Excerpts from this series of emails written in June and July of 2008 (some of which address a potential, GSK-wide hiring freeze) appear below:

On the HR front, I think we're making it through the first real bump we've experienced in integration. It was a surprise to realize that our budget of 71 FTEs, the basis of how we have been running the company, was not certain. I feel that through several conversations with Patrick [Vallance], we've gotten through this point, which allows me to take the company off an effective hiring freeze which, in this period of change, could have had devastating effects on retention and morale. We have already gone down from 61 FTE at acquisition to 58 now, and I expect a few folks to leave over the next 3-6 months, such that we really need to start hiring scientists to get going again. One further point on HR, I do think that if I lose the ability to hire and fire (it felt like that over the last few weeks given the hiring freeze) it will be hard to maintain the culture here.

Westphal also wrote about the time pressures on him:

After having met with well over 40 groups and leaders in GSK I am starting to learn that you have extraordinary talent in some areas. I am also learning that I need to say no to the many folks who want to visit and talk. This has already ruffled some feathers at GSK. Folks may think I am impatient or have a short attention span since I have a rule at Sirtris that most meetings should be less than 45 minutes at most. Often we have visitors from GSK getting in touch with us to spend a full day or a half day with us. Almost every GSK group asks for many more hours of meetings than we are willing to do and it leads to friction sometimes. I don't see how with our very small headcount that we can get our mission critical work done if we spend that much time in meetings talking to folks.

Also, meetings and visits with GSK tend to involve more folks than we are used to. I like to have a rule at Sirtris that nobody should be in a meeting where they are not a leader or mission critical. Often we keep our meetings to less than six people. The cost is communication – which can be partially overcome in a tiny company – but the upside seems enormous – liberating folks to focus 90% of their time on getting their work done. I welcome anyone who asks not to attend a meeting to get work done. I'm sure there are big drawbacks to this approach, but I feel that in large companies, many folks seem to spend their time going from one huge meeting to another all day long.

He also was concerned about how work got done at Sirtris:

Prior to the acquisition, Sirtris was a highly productive, fully integrated place that got things done very quickly. We believe to continue in that vein we will need to control everything from discovery, through filing of regulatory documents and running early trials. We will need to bring the amazing resources of GSK to bear on Sirtris, but the way we'll keep the entrepreneurial spirit alive is by being pretty self-contained. I'm sure we'll have fun trying with you to achieve that.

And he wrote about a few other issues:

I think one of the most important ways we will keep the entrepreneurial spirit alive at Sirtris is to buffer my organization from the many centralizing forces at GSK (HR, PR, finance, clinical, regulatory). Perhaps you could coach us on how to maintain our independent spirit: science publications (it feels there is more oversight to this now); the press (who have always

been interested in our story but are finding it harder to access us); small items like petty cash (for spot awards, company parties, etc.), travel (now run via corporate); and G&A; how do other DPUs do this?

Slaoui's Challenge

While Slaoui faced numerous challenges to successfully integrate Sirtris into GSK, a few related issues stood out.

The first was retention of talent. Slaoui believed that the reasons a scientist went to a biotechnology company might be different from the reasons a scientist might go to a big pharma company. For example, one might be primarily looking to work with the leading edge of science while another might value a stable career. Slaoui also noted that scientists who went to biotechs tended not to expect to be there for many years – when the company failed or was sold, or the science changed, they moved on. Because he was looking for a diversity of research and discovery, he needed to figure out how to hold on to the scientists who came to GSK through an acquisition such as Sirtris.

This concern extended to Westphal, Dipp, and the rest of the senior leadership. What would be the optimal role for Westphal at GSK? (See **Exhibit 15** for a detailed biography of Westphal.) Would it make sense for him to continue as CEO of Sirtris, or was there another role that might appeal to him and would increase the probably that he would remain with GSK? Dipp, Sirtris's senior director of corporate development, was also on GSK's shortlist of people to retain. Dipp played a central role at Sirtris and was a key partner in its strategic deliberations. In the months since the acquisition, Dipp had managed the integration of Sirtris into GSK in the areas in which integration had occurred.

A related challenge was reward and recognition. Slaoui explained that at Sirtris, Westphal and his board set compensation. If someone did something significant, Westphal could give that person an additional stock grant in the company. At a big company such as GSK, however, Slaoui understood that this was harder. People in one part of the organization could compare their pay opportunities to people in other parts. This meant that there needed to be an element of fairness and homogeneity. Slaoui wondered how he could motivate and retain scientists at Sirtris in this environment.

Another issue was how to manage the broader interfaces between Sirtris and other DPUs (and, more generally, the relationships among the units in the newly created DPU structure). For instance, what would happen when one DPU desired to borrow a drug target, compound, material, etc. developed at a different DPU? This issue had already arisen with Sirtris. Sirtris had developed several sirtuin compounds, but was concentrating its research on one particular compound, SRT2104. Sirtris viewed SRT2104 as its most promising compound and it hoped to use it to develop an orally administered drug for diabetes. Sirtris had allowed other GSK DPUs to use its compounds and it had many such "collaborations" under way. Sirtris had refused, however, to allow a DPU in neurology to explore the potential use of SRT2104 in treating Alzheimer's disease. While Sirtris had no near-term plan to pursue this area, Westphal was concerned that if another GSK group developed the same molecule for another therapeutic area that Sirtris developed for diabetes, there could be pricing issues in the marketplace. Doctors treating diabetes, for example, might prescribe an Alzheimer drug for their diabetes patients if the Alzheimer drug carried a lower price. While the DPU model relied in part on the independent decision making of DPU heads, Slaoui needed to devise a way to make the entire research at GSK greater than the sum of its individual parts.

And of course, Slaoui recognized that the way to create the greatest value from the Sirtris acquisition would be to transfer Sirtris's entrepreneurial orientation to other parts of GSK. But how could he do this without undermining the proverbial "goose that lays the golden egg?"

Exhibit 1 GSK Consolidated Income Statement for the Year Ended December 31, 2007

	2007 (£ Million)	2006 (£ Million)	2005 (£ Million)
Turnover	£22,716	£23,225	£21,660
Cost of sales	(5,317)	(5,010)	(4,764)
Gross profit	£17,399	£18,215	£16,896
Selling, general, and administration	(6,954)	(7,257)	(7,250)
Research and development	(3,327)	(3,457)	(3,136)
Other operating income	475	307	364
Operating profit	£ 7,593	£ 7,808	£ 6,874
Finance income	262	287	257
Finance costs	(453)	(352)	(451)
Share of after-tax profits of associates and joint ventures	50	56	52
Profit before taxation	£ 7,452	£ 7,799	£ 6,732
Taxation	(2,142)	(2,301)	(1,916)
Profit after taxation for the year	£ 5,310	£ 5,498	£ 4,816

Source: GSK Annual Report 2007.

Exhibit 2 GSK Consolidated Balance Sheet Data at December 31, 2007

	2007 (£ Million)	2006 (£ Million)
ASSETS		
Total noncurrent assets	£17,377	£ 14,561
Total current assets	£13,626	£ 10,992
Total assets	£31,003	£ 25,553
LIABILITIES		
Total current liabilities	£(10,345)	£ (7,265)
Total noncurrent liabilities	£(10,748)	£ (8,640)
Total liabilities	£(21,093)	£ (15,905)
EQUITY		
Total equity	£ 9,910	£ 9,648

Source: GSK Annual Report 2007.

Exhibit 3 GSK Consolidated Cash Flow Statement for the Year Ended December 31, 2007

	2007 (£ Million)	2006 (£ Million)	2005 (£ Million)
Net cash inflow from operating activities	£ 6,161	£ 4,357	£ 5,958
Net cash outflow from investing activities	£ 3,009)	£(1,521)	£(1,660)
Net cash outflow from financing activities	£(1,741)	£(4,792)	£(2,914)
Increase/(decrease) in cash and bank overdrafts	£ 1,411	£(1,956)	£1,384
Exchange adjustments	48	(254)	233
Cash and bank overdrafts at beginning of year	1,762	3,972	2,355
Cash and bank overdrafts at end of year	£ 3,221	£ 1,762	£3,972

Source: GSK Annual Report 2007.

Exhibit 4 Average Exchange Rate Data (U.S. dollars for pounds Sterling)

	2007	2006	2005	2004	2003
Average	2.00	1.85	1.81	1.84	1.63

Source: GSK Annual Report 2007.

Note: The average rate for the year is calculated as the average of the noon buying rates on the last day of each month during the year.

Exhibit 5 GSK Pharmaceutical Turnover by Therapeutic Area

Pharmaceutical Turnover by Therapeutic Area	2007 (£ Million)	2006 (£ Million)	2005 (£ Million)	2004 (£ Million)	2003 (£ Million)
Respiratory	£ 5,032	£ 4,995	£ 5,054	£ 4,394	£ 4,390
Central nervous system	3,348	3,642	3,219	3,462	4,446
Anti-virals	3,028	2,827	2,598	2,359	2,345
Metabolic	1,514	1,875	1,495	1,251	1,077
Vaccines	1,993	1,692	1,389	1,194	1,121
Cardiovascular and urogenital	1,554	1,636	1,331	932	770
Anti-bacterials	1,330	1,369	1,519	1,547	1,800
Oncology and emesis	477	1,069	1,016	934	1,000
Other	957	973	1,040	1,027	1,165
	£19,233	£20,078	£18,661	£17,100	£18,114

Source: GSK Annual Report 2007.

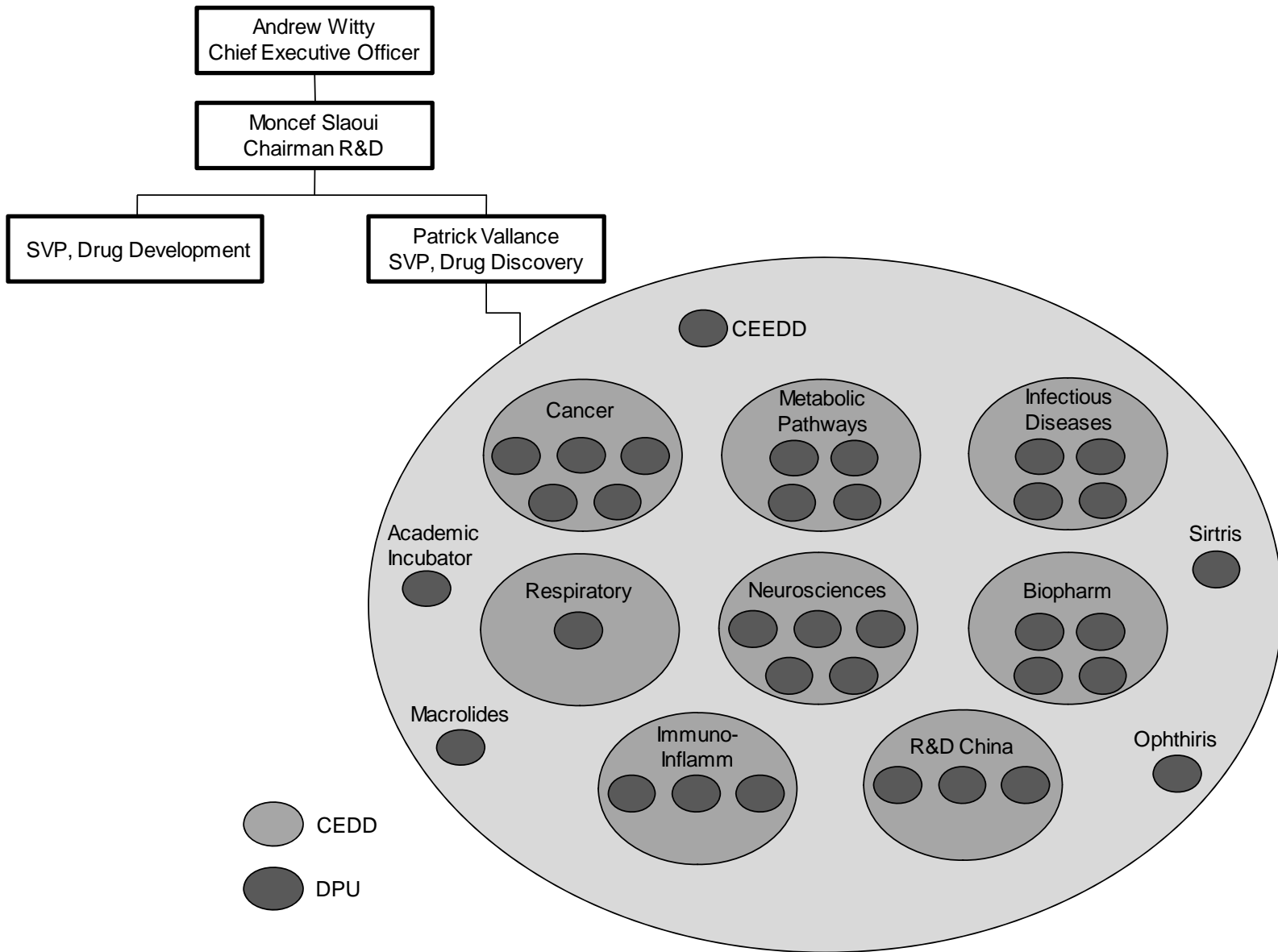
Note: The number of employees is the number of permanent employed staff at the end of the financial period. It excludes those employees who are employed and managed by GSK on a contract basis.

Exhibit 6 GSK Number of Employees

	2007	2006	2005	2004	2003
Manufacturing	33,995	33,235	31,615	31,143	32,459
Selling	44,499	44,484	44,393	44,646	43,978
Administration	8,960	9,024	9,225	9,193	9,550
Research and development	16,029	15,952	15,495	15,037	14,932
	103,483	102,695	100,728	100,019	100,919

Source: GSK Annual Report 2007.

Exhibit 7 Organization Chart



Source: GSK Company Document.

Exhibit 8 Sirtris Scientific Advisory Board

BioPharma Expertise	Sirtuin Expertise
Tom Salzmann, Co-Chair SAB Former EVP Merck	Biochemistry Lenny Guarente, Co-Chair SAB, MIT Anthony Sauve, Cornell Vern Schramm, AECOM David Sinclair, Co-Chair SAB, HMS Eric Verdin, UCSF
Peter Hutt Former FDA General Counsel	Mouse Genetics, Phenotypes Fred Alt, HMS, NAS, HHMI Johan Auwerx, ICB
Bob Langer MIT, NAS, NAE, IOM, Co-Founder Momenta, AIR	Structural Biology Cynthia Wolberger, JHU, HHMI
Tom Maniatis Harvard, NAS, Co-Founder GI, Acceleron	Links to Disease Ron Kahn, Joslin, NAS Jeff Milbrandt, Washington University Jerrold Olefsky, UCSD Pere Pulgserver, HMS Eric Ravussin, Pennington Institute Li-Huei Tsai, MIT, HHMI
Phil Sharp Co-Founder Biogen and Alnylam, NAS, Nobel Prize	
Eric Gordon Former head of Medicinal Chemistry at Bristol-Myers, Founder of Vicuron Pharmaceuticals	
Chris Walsh Harvard, NAS, IOM, Genzyme, Vicuron	

Source: GSK Company Document.

HHMI = Howard Hughes Medical Institute

ICB = Mouse Clinical Institute in Strasburg, France

NAS = National Academy of Sciences

NAE = National Academy of Engineers

AECOM = Albert Einstein College of Medicine

Exhibit 9 Sirtris Consolidated Balance Sheets (in thousands)

	March 31, 2008	December 31,	
		2007	2006
ASSETS			
Current assets:			
Cash and cash equivalents	\$27,656	\$23,062	\$7,513
Short-term investments	79,879	95,024	42,497
Prepaid expenses and other current assets	1,568	1,610	346
Restricted cash	--	26	26
Total current assets	109,103	119,722	50,382
Property and equipment, net	3,579	3,221	1,481
Other assets	159	172	223
Restricted cash	2,100	2,100	--
Total assets	<u>\$114,941</u>	<u>\$125,215</u>	<u>\$52,086</u>
Liabilities and Stockholders' Equity (deficit)			
Current liabilities:			
Accounts payable	\$ 2,010	\$ 2,558	\$ 829
Accrued expenses	1,534	2,932	1,197
Current portion of notes payable, net of discount	2,565	2,498	1,018
Total current liabilities	6,109	7,988	3,044
Warrant to purchase shares subject to redemption		--	438
Notes payable, net of current portion and discount	6,042	6,711	9,425
Redeemable convertible preferred stock, at liquidation value		--	66,813
Stockholders' equity (deficit):			
Preferred stock, \$0.001 par value; 20,000 shares authorized at December 31, 2007 and none at December 31, 2006; none issued as of December 31, 2007 and 2006	--	--	--
Common stock, \$0.001 par value; 206,575 shares authorized at December 31, 2007 and 2006; 28,758 and 1,345 shares issued and outstanding at December 31, 2007 and 2006, respectively	29	29	1
Additional paid-in capital	171,166	169,932	916
Accumulated other comprehensive income	324	218	22
Deficit accumulated during the development stage	(68,729)	(59,663)	(28,573)
Total stockholders' equity (deficit)	102,790	110,516	(27,634)
Total liabilities, redeemable convertible preferred stock and stockholders' equity (deficit)	<u>\$114,941</u>	<u>\$125,215</u>	<u>\$52,086</u>

Source: Sirtris SEC Filings, 10-K and 10-Q.

Exhibit 10 Sirtris Consolidated Statements of Operations (in thousands)

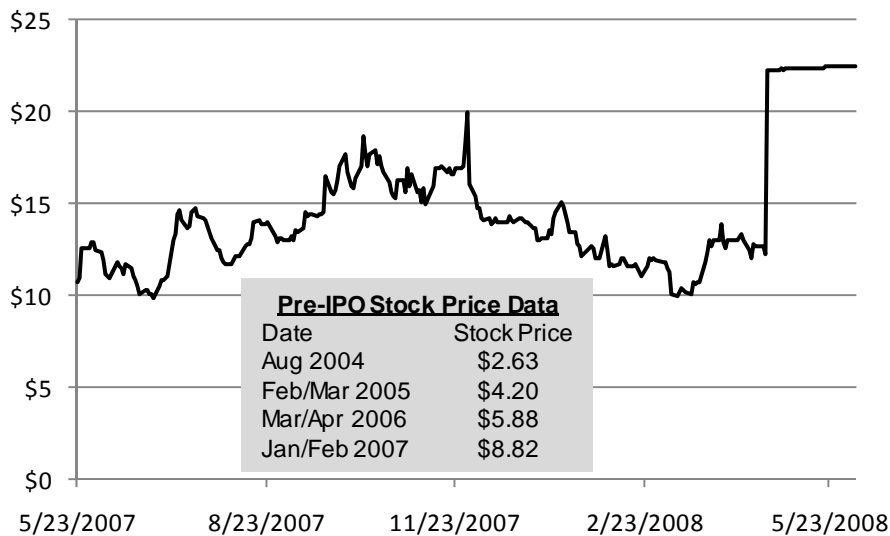
	Period from March 25, 2004 (date of inception) through March 31, 2008	Three Months Ended March 31,		Year Ended December 31,	
		2008	2007	2007	2006
Revenue	\$ 568	\$ 500	\$ --	\$ --	\$ --
Operating expenses:					
Research and development	59,411	7,882	5,120	29,035	14,242
General and administrative	17,698	2,637	1,239	6,157	4,340
Total operating expenses	77,109	10,519	6,359	35,192	18,582
Loss from operations	(76,541)	(10,019)	(6,359)	(35,192)	(18,582)
Interest income	10,388	1,258	900	5,495	2,447
Interest expense	(2,576)	(305)	(324)	(1,393)	(878)
Net loss	\$(68,729)	\$(9,066)	\$(5,783)	\$(31,090)	\$(17,013)

Source: Sirtris SEC Filings, 10-K and 10-Q.

Exhibit 11 Sirtris Consolidated Statements of Cash Flow (in thousands)

	Period from	Three Months		Year Ended	
	March 25, 2004 (date of inception) through March 31, 2008	Ended March 31,		December 31,	
		2008	2007	2007	2006
Operating Activities					
Net loss	\$(68,729)	\$(9,066)	\$(5,783)	\$(31,090)	\$(17,013)
Adjustments to reconcile net loss to net cash used in operating activities:					
Depreciation and amortization	1,278	225	106	628	297
Stock-based compensation expense	4,874	1,046	274	2,935	758
Issuance of common stock in exchange for licenses and services	82	--	--	--	--
Non-cash rent expense	97	--	28	72	20
Non-cash interest expense	347	39	36	216	92
Change in operating assets and liabilities:					
Prepaid expenses and other current assets	(1,568)	42	(58)	(1,264)	91
Other assets	(193)	13	(681)	51	(257)
Accounts payable	2,010	(548)	1,525	1,729	79
Accrued expenses	1,534	(1,398)	(571)	1,735	578
Deferred rent	--	--	--	--	(18)
Net cash used in operating activities	(60,268)	(9,647)	(5,124)	(24,988)	(15,373)
Investing Activities					
Purchases of property and equipment	(4,857)	(583)	(674)	(2,369)	(1,141)
Purchases of short-term investments	(344,400)	(49,980)	(36,972)	(184,993)	(56,727)
Sales and maturities of short-term investments	264,845	65,231	23,517	132,662	40,075
Decrease (increase) in restricted cash	(2,100)	26	--	(2,100)	--
Net cash provided by (used in) investing activities	(86,512)	14,694	(14,129)	(56,800)	(17,793)
Financing Activities					
Proceeds from issuance of redeemable convertible preferred stock	102,565	--	35,890	35,890	21,969
Proceeds from issuance of common stock	62,835	188	62	62,567	77
Proceeds from note payable	10,797	--	--	--	10,797
Repayment of note payable	(1,761)	(641)	--	(1,120)	--
Net cash (used in) provided by financing activities	174,436	(453)	35,952	97,337	32,843
Net increase in cash and cash equivalents	27,656	4,594	16,699	15,549	(323)
Cash and cash equivalents at beginning of period	--	23,062	7,513	7,513	7,836
Cash and cash equivalents at end of the period	\$27,656	\$27,656	\$24,212	\$23,062	\$7,513

Source: Sirtris SEC Filings, 10-K and 10-Q.

Exhibit 12 Sirtris Historical Stock Price (May 23, 2007 – June 5, 2008)

Source: Thomson One, accessed December 1, 2008, and company documents.

Exhibit 13 Holdback Provision in Westphal's Compensation as part of the GSK Acquisition

Subject to specified exceptions, the cash payments described in this paragraph are subject to holdback arrangements designed to encourage retention of Company personnel, to the extent such payments are in respect of Options or Restricted Stock unvested at the Purchase Time. Under the holdback arrangements, 25 percent of the after tax amount of such payment will be placed into a custodial brokerage account invested in GSK common stock and will be paid out over four years from the Purchase Time. If the recipient voluntarily resigns, any remaining payments from the custodial account will be forfeited.

Source: Sirtris SEC Filing: Schedule 14D-9, filed May 2, 2008.

Exhibit 14 Sirtris Ownership by Key Executives

Executive	Title	Shares Owned
Christoph Westphal M.D., Ph.D.	President and Chief Executive Officer	804,942
Garen Bohlin	Chief Operating Officer	234,462
Peter Elliott, Ph.D.	Senior Vice President, Head of Development	253,070
David Sinclair, Ph.D.	Co-founder, Co-chair Scientific Advisory Board	289,142
Total Shares Issued and Outstanding		29,266,469

Source: Sirtris SEC Filing: Schedule 14D-9, filed May 2, 2008.

Exhibit 15 Christoph Westphal Biography

Christoph Westphal, M.D., Ph.D., co-founded Sirtris in 2004 and has since served as Chief Executive Officer. In addition to leading Sirtris as an independent discovery performance unit within GSK, Dr. Westphal serves as the Senior Vice President of GSK's Centre of Excellence for External Drug Discovery (CEEDD). At CEEDD, Dr. Westphal and his team are developing a network of external alliances with world-class biotech companies to bring breakthrough medicines into the GSK pipeline. He is based at Sirtris, which is located in Cambridge, Massachusetts.

Under his leadership, Sirtris has become a recognized pioneer in the research and development of small molecule drugs that target the sirtuins, a family of enzymes that control the aging process. In 2007, Dr. Westphal successfully led the company through its initial public offering, resulting in recognition by the Boston Globe as one of the Globe 100 top IPOs of 2007. In June 2008, GSK acquired Sirtris for \$720 million.

Prior to establishing Sirtris, Dr. Westphal co-founded Alnylam Pharmaceuticals, Inc. (NASDAQ: ALNY), Momenta Pharmaceuticals, Inc. (NASDAQ: MNTA) and Acceleron as CEO. Dr. Westphal was formerly a general partner at a venture fund and a consultant with McKinsey. He earned his M.D. from Harvard Medical School and Ph.D. in genetics from Harvard University. He graduated with a B.A. summa cum laude and Phi Beta Kappa from Columbia University.

Dr. Westphal currently serves on the Board of Directors for Alnara Pharmaceuticals, Concert Pharmaceuticals and Magen BioSciences, and he serves on the Board of Fellows of Harvard Medical School. Dr. Westphal has been the lead or senior author on several patent applications and scientific papers in journals including Cell, Nature and Nature Genetics.

Dr. Westphal has received a number of industry awards, including the 2008 Outstanding Individual of the Year Award at the annual Laguna Biotech Meeting; recognition in the Pharmaceutical Executive "45 Under 45" and PharmaVOICE 100 issues, both in 2008; Mass High Tech All Star Award in 2007; and Ernst & Young's New England Entrepreneur of the Year award in the Biopharmaceutical category in 2006.

Dr. Westphal enjoys traveling (he has visited over 130 countries) and playing the cello. He is also fluent in English, German, Spanish and French. Dr. Westphal is married with three young children.

Source: Company Document, Sirtris Web site, <http://www.sirtrispharma.com/about-exec.html>, accessed January 29, 2009.