

Receptos Starts with \$25M Funding, GPCR Dream Team

By Donna Young
Washington Editor

The combination of breakthrough scientific discoveries, experienced drug hunters and a seasoned business management team is the perfect biotech dream team sought after by any venture capitalist.

And Kristina Burow, a partner at ARCH Venture Partners, said she and VC investors Venrock, Flagship Ventures and Lilly Ventures have struck gold with Receptos Inc.

"They are everything you could possibly hope for," said Burow, who was instrumental in bringing together Scripps Research Institute professors Raymond Stevens and Hugh Rosen – Receptos' scientific co-founders – with former Biogen Idec managers William Rastetter, Marcus Boehm and Robert Peach to create the newly formed San Diego-based biotech.

"They are an incredibly attractive mix," Burow told *BioWorld Today*.

Rastetter, Receptos' interim CEO and a partner at Venrock, is a former executive chairman at Cambridge, Mass.-based Biogen and a former president and CEO of Idec Pharmaceuticals, Burow noted.

Boehm, Receptos' vice president of chemistry, is the former vice president of chemistry at Conforma Therapeutics, which was acquired by Biogen, while Peach, Receptos' vice president of biology, served as Biogen's senior director of oncology, she added.

James Schmidt, Receptos' chief of finance and administration, also is a Conforma veteran.

Stevens, along with his colleagues, made two major scientific breakthroughs involving G-protein-coupled receptors (GPCRs) – the largest family of proteins in the human genome – by determining the crystal structure of engineered human beta-2 adrenergic and human A2A adenosine, said Chrysa Mineo, vice president of corporate development at Receptos.

Rosen, a recognized academic leader in the area of sphingosine 1-phosphate (SIP) biology, has long been working with compounds that are allosteric agonists for SIPI, Mineo explained.

Based on Stevens' and Rosen's technology, Receptos has

developed an allosteric agonist that specifically targets the SIPI receptor, she said.

The firm is pursuing an initial indication of multiple sclerosis for its SIPI agonist program, Mineo noted.

The company recently received the majority of a two-tranche \$25 million Series A financing from its four VC investors to pursue development of that program through to Phase I testing, she said.

The other portion of the funding will be made available to Receptos upon the filing of its investigational new drug application (IND) for the SIPI multiple sclerosis candidate, which is expected to occur in the latter part of 2010, Mineo said.

Receptos' candidate has been selected and will be going into IND-enabling studies before the end of the year, she added.

Traditional GPCR drug discovery uses high-throughput screening and cell-based assays as the primary tools toward the discovery of active compounds at the receptor, according to Receptos.

But given the difficulty in stabilizing membrane proteins outside their natural environment, the opportunity to work directly with pure and stable receptor protein was previously not an option, particularly for metastable human GPCRs, which has limited the drug industry's ability to obtain high-resolution crystal structures.

Receptos said it uses a comprehensive information-driven approach to GPCR drug discovery that combines traditional screening information with biophysical ligand screening using pure and stable receptor protein, chemistry structure-activity relationships, novel biological insight into allosteric binding sites, site-specific mutagenesis to probe residue-ligand interactions, GPCR crystal structure and co-crystal structure iterations.

Receptos is studying only human proteins for drug discovery, stabilizing the GPCR receptor through physical chemical means and not through any type of mutagenesis, Mineo emphasized.

"That's important to some collaborators because they

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feel that any time you mutate the receptor, you introduce a variable into drug discovery that may not be optimal for discovering a human therapeutic because you have altered the receptor from its naturally occurring state," she said.

Receptos' SIPI candidate has a "unique" mechanism of action, which modulates the immune system without interfering with those immune processes required for fighting viral infections, Mineo said.

"We think that we have a potentially best-in-class compound," she insisted. "It has best-in-class potency and selectivity, so we think we can demonstrate an improved safety profile for this compound."

While Receptos plans to wait until it has generated a "robust package" of data before it begins partnering discussions for its SIPI candidate, the firm already has started talks with potential collaborators on other areas involving its technology, Mineo said.

"We want to select GPCR receptors in collaboration with our partners, apply our technology and our proprietary know-how to determining the structure and advancing their drug discovery programs," she said. "So our partnering discussions are quite advanced. It is exciting."

The ability to crystallize GCPR targets, ARCH's Burow said, "is going to be of high interest to pharmaceutical companies" – an outcome Receptos' VC investors expect to "capitalize on," she said.

"I have very high expectations for this company," Burow said. "I think they have the makings of a really terrific pipeline. They have a really interesting breakthrough platform that will enable them to have best-in-class and first-inclass products, which is something we feel very strongly about. The level of excitement has been incredibly high, and that, of course, is very nice for us to see as investors." ■