



CLEMSON  
CENTER FOR  
HUMAN GENETICS



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**EARLY DIAGNOSIS FOR EARLY INTERVENTION.**

For a family dealing with a genetic disorder, just getting a diagnosis can be difficult, costly, slow and frustrating. In fact, some experts say that 30-40 percent of children with special needs have no exact diagnosis. Meanwhile, the child, the family and the community live in limbo. Wondering where to look for answers. Wondering if they are doing all they can. Wondering if things will ever get better.



ClemsonForward will position Clemson for the next 50 years and make an impact on real issues facing the people of our state and nation. Clemson Forever supports the goals of ClemsonForward through its unrelenting mission to strengthen the University by building a solid financial base of private giving, providing exemplary stewardship of those gifts and clearly communicating to donors the impact of their gift and the gratitude of the Clemson Family.

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**For many disorders, a diagnosis is made later in childhood through observation of symptomatic behaviors. By that time, the family may have spent years in turmoil and uncertainty, searching for answers to their child's behavior or developmental issues.**

The cost is staggering. In fact, the effects for just one such disorder, autism, are felt across families and communities. It is estimated that autism

- costs over \$3.5 million per person for a lifetime of treatment,
- results in 92 percent unemployment,
- breaks up 84 percent of the families touched,
- affects one in 68 children – five times as many boys,
- grows in numbers every year and
- never manifests itself in exactly the same manner.

### Greenwood Genetic Center: Research + Therapeutics = Positive Outcomes

Key to providing effective treatment and support for those affected by genetic disorders and their families is early diagnosis followed by a comprehensive therapeutic plan.

To achieve that, a collaborative, dedicated team of researchers and innovators must come together – exactly as they have at the Clemson Center for Human Genetics.

In 2013, the Self Family Endowed Chair in Human Genetics was created at Clemson, jointly funded by The Self Family Foundation and the state of South Carolina, with the specific goal of bringing to the area a leading geneticist who will work toward treatment, and preventive, diagnostic and curative tools with life-changing and

economic potential. Today, Clemson University, Self Regional Healthcare and the Greenwood Genetic Center have formed a collaboration that unites the efforts of genetic research and clinical therapeutics to provide the earliest possible diagnostics and therapy for certain genetic conditions. Early focus will be specifically on diagnostic discovery and development, and epigenetic therapeutic discovery and development in these areas:

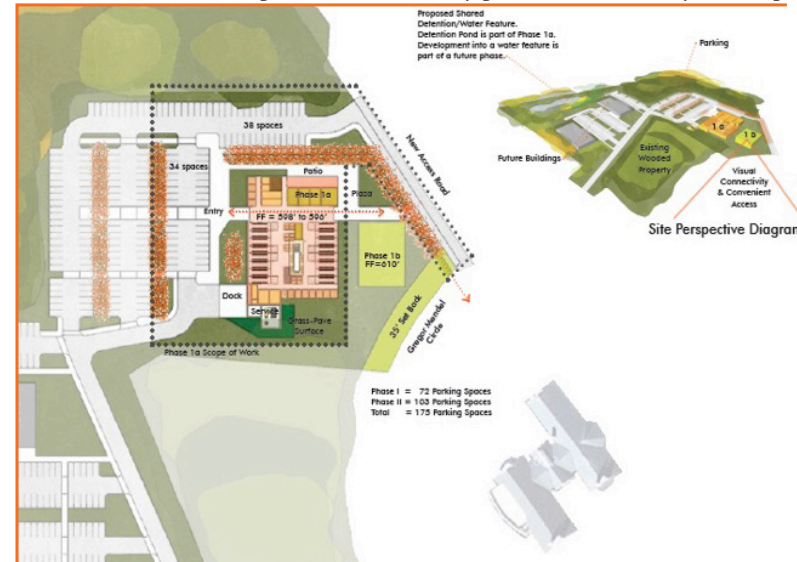
- Autism
- Cognitive development
- Oncology diagnostics
- Lysosomal disorders

### Each partner shares its strengths.

Clemson University is widely regarded as a top research university. Clemson is ranked as a R1 research institution and for nine straight years, Clemson has been ranked as a top-25 national public university by *U.S. News & World Report*, clear recognition of the quality of the faculty, students and programs the University provides year after year. Greenwood Genetic Center is the largest single provider to children with autism and genetic disabilities in South Carolina. Self Regional Healthcare, understanding the dire need, has signed on as the lead hospital partner in the collaboration.

The Clemson Center for Human Genetics (CCHG) on the campus of the Greenwood Genetic Center provides a hub for research aimed at finding new ways to diagnose and treat autism, intellectual and developmental

disabilities, cancer, diabetes, heart disease and other conditions. The team is also building on strengths in diagnostics to develop new tests to identify genetic disorders very early – as early as in utero – in order to anticipate or avoid many problems that may develop.



The Clemson Center for Human Genetics at the Greenwood Genetics Center.

### Clemson leads, innovates and educates.

In the areas of academics and research, in addition to the endowed chair, Clemson will lead the charge by providing faculty and graduate and undergraduate student researchers. The University is also uniquely capable of supplying vital computing capacity for the researchers – the computing power and expertise to “run the numbers” needed in the computational analysis of vast amounts of research data.

Of the earliest collaborative projects in 2014, seven research projects linked Clemson University with the Greenwood Genetics Center – five were focused on the understanding and treatment of autism spectrum disorders, while two were studying improved diagnostics for hereditary cancers.

### Changing lives.

One promising study recently completed is a blood test that could screen for autism. On-going research into early diagnosis and treatment holds promise for early intervention, with the goal

of improving the quality of life for sufferers and their families. According to the latest numbers from the Centers for Disease Control, early screening and treatment is vital to improving the child's chances of meeting the challenges of the disorder.

With diagnostic tests being developed and launched today, the Genetic Center's Dr. Steve Skinner estimates that, with adequate funding, new therapeutics could follow within a decade, offering relief to one in 68 children in the U.S. dealing with autism, an increase of 78 percent between 2000 and 2012 (Centers for Disease Control).

### A goal of being among the very best.

The outcomes are too important. The cost of failure is too high for the families and society as a whole. The Clemson Center for Human Genetics must be among the nation's very best in order to serve our population, lower the cost of treating and serving this population, and build the area's economy.

In order to achieve this lofty but attainable goal, the CCHG must have the support necessary to:

- create a second endowed chair for human genetics,
- provide graduate and undergraduate research fellowships to ensure the advancement of the field in the future,
- develop core partner research relationships,
- expand research labs and equipment,
- create a cluster of emerging and middle-tier diagnostic and genetic research companies at the campus and
- capitalize on the unique combination of research/clinical capabilities through Clemson University and the Greenwood Genetics Center.

### The place for visionaries.

The plan is in place. The work is underway. The ground has been broken. Ultimately the success of this seminal work will depend on partners such as you who embrace the challenge and understand the transformational effects of this work.

