Therapeutics that target angiogenesis are well accepted for treating human ocular neovascular diseases such as AMD. Commercially successful drugs include Lucentis, which targets the vascular endothelial growth factor (VEGF) receptor. However, drawbacks associated with antibodies targeting VEGF include mode and frequency of administration as well as undesirable side-effects, such as strokes.

In developing more specific and potent therapies, Dr. Tim Stout and his team have demonstrated that related transcriptional enhancer factor-1 (RTEF-1 or TEAD4) is expressed in retinal vascular endothelial cells and is a key regulator of VEGF expression under hypoxic conditions. While TEAD4 itself promotes VEGF expression, and is thus pro-angiogenic, Dr. Stout and his team have isolated isoforms produced by alternative splicing of the TEAD4 mRNA that positively or negatively regulate VEGF gene transcription. Notably, one of these isoforms, human TEAD4-651, potently and competitively inhibits VEGF activity. The Stout team has also identified TEAD4 transcripts in uterine, colon, breast and renal tumor cells, suggesting a role for TEAD4 expression and perhaps splicing in cancer or cancer cell proliferation.

TEAD4-651, a spliced variant of TEAD4, potently and competitively inhibits VEGF activity, and could be used to treat VEGF-dependent diseases. It is potentially more potent than existing drugs as it targets both the VEGF and FGF pathways.

Key applications

- TEAD4-651 gene therapy for ocular neovascular diseases
- Peptide therapeutic for various solid cancers
- Assay to screen for small molecule therapeutics to inhibit angiogenesis

In development

- Proof of concept using lentiviral vectors in ocular neovascularization models
- Animal studies with TEAD4 polypeptide are currently being conducted

We are seeking partners to license our patents and help develop these novel therapeutic strategies.

Clayton Biotechnologies commercializes technologies that are developed and owned by the Clayton Foundation for Research and its supporting entities through research programs at leading research hospitals and institutions in the US and Switzerland.

To date, our research programs have lead to the creation of several successful companies and the launch of 8 products ranging from therapeutic products, medical devices to diagnostics.


Three patent families: US8748379 and related patents and applications; US8785385 and related patents and applications; and PCT/US15/17522