



Qty: 100 µg/400 µL

Rabbit anti-Angiogenin

Catalog No. 40-7600

Lot No.

## Rabbit anti-Angiogenin

### FORM

This polyclonal antibody is supplied as a 400 µL aliquot at a concentration of 0.25 mg/mL in phosphate buffered saline (pH 7.4) containing 0.1% sodium azide. This antibody is epitope-affinity purified from rabbit antiserum.

PAD: ZMD.496

### IMMUNOGEN

Synthetic peptide derived from the N-terminal region of the human, gorilla, and orangutan angiogenin protein, which differs from mouse by one amino acid

### SPECIFICITY

This antibody is specific for the angiogenin (Ang, RNase4, RNase5) protein. On Western blots, it identifies the target band at ~14 kDa.

### REACTIVITY

Reactivity has been confirmed with recombinant human angiogenin protein.

Sample	Western Blotting
Human	+++

(Excellent +++, Good++, Poor +, No reactivity 0, Not applicable N/A, Not Determined ND)

### USAGE

Working concentrations for specific applications should be determined by the investigator. Appropriate concentrations will be affected by several factors, including secondary antibody affinity, antigen concentration, sensitivity of detection method, temperature and length of incubations, etc. The suitability of this antibody for applications other than those listed below has not been determined. The following concentration ranges are recommended starting points for this product.

**Western Blotting:** 1-3 µg/mL

### STORAGE

Store at 2-8°C for up to one month. Store at -20°C for long-term storage. Avoid repeated freezing and thawing.

(cont'd)

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## BACKGROUND

Angiogenesis, the process of new blood vessel formation from the established microcirculation, accounts for the formation of vasculature into previously avascular organs such as brain and kidney,<sup>1-2</sup> and is required in the adult during normal tissue repair and in the remodeling of the female reproductive organs.<sup>3</sup>

Angiogenin (Ang) is a non-glycosylated polypeptide, 123 amino acids in length, with a molecular mass of 14 kDa. It is secreted by tumor cells<sup>4</sup> and is a potent inducer of neovascularization. Angiogenin is produced by a variety of cell types including vascular endothelial cells and smooth muscle cells,<sup>5</sup> fibroblasts, tumor colonic epithelium, normal peripheral blood lymphocytes,<sup>6</sup> lung and colonic epithelial tumor cell lines,<sup>6</sup> and primary gastrointestinal adenocarcinomas.<sup>7</sup> It specifically binds to endothelial cells and elicits second messenger systems. Angiogenin is present in human follicular fluid, and its production is up-regulated by human chorionic gonadotropin and hypoxic conditions.<sup>8</sup> Angiogenin shows a high degree of homology with known ribonucleases such as pancreatic ribonuclease A,<sup>9</sup> and the capacity of angiogenin to induce blood vessel growth is dependent on its ribo-nucleolytic activity. Angiogenin is thought to be involved in the development of solid tumors; angiogenin antagonists are capable of inhibiting tumor growth. Angiogenin is endocytosed by subconfluent endothelial cells and translocated to the nucleus, where it accumulates in the nucleolus.<sup>10-11</sup> Serum angiogenin concentration is increased in serum of colorectal cancer patients, and correlates with cancer progression.<sup>12</sup> The cytoskeletal protein  $\alpha$ -actinin-2 binds to angiogenin, which might be a novel interface target for anti-angiogenesis and anti-tumor therapy.<sup>13</sup>

## REFERENCES

1. Cockerill GW, et al. *Int Rev Cytol* 159:113-160, 1995.
2. Diaz-Flores L, et al. *Histol Histopathol* 9:807-843, 1995.
3. Rajashekhar G, et al. *Mol Reprod Dev* 62:159-166, 2002.
4. Kurachi K, et al. *Biochemistry* 24:5494-5499, 1985.
5. Moenner M, et al. *Eur J Biochem* 226:483-490, 1994.
6. Rybak SM, et al. *Biochem Biophys Res Commun* 146:1240-1248, 1987.
7. Li D, et al. *J Pathol* 172:171-175, 1994.
8. Koga K, et al. *J Clin Endocrinol Metab* 85:3352-3355, 2000.
9. Archaya KR, et al. *PNAS* 91:2915-2919, 1994.
10. Moroianu J, et al. *Biochem Biophys Res Commun* 203:1765-1772, 1994.
11. Tsuji T, et al. *Cancer Res* 65:1352-1360, 2005.
12. Shimpyama A, et al. *Clin Cancer Res* 5:1125-1130, 1999.
13. Hu H, et al. *Biochem Biophys Res Commun* 329:661-667, 2005.

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<b>Product</b>	<b>Conjugate</b>	<b>Cat. No.</b>
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