

Transgenic ZP2 Mouse Model Produces Eggs That Bind to Human Sperm Protein

Description of Technology: Fertilizing sperm bind to an extracellular coat surrounding mammalian eggs called zona pellucida. Depending on the species, the zona pellucida is composed of ZP1, ZP2, ZP3, and/or ZP4 proteins. Recent studies show that sperm successfully adhere to the zona pellucida surface when ZP2 is intact. In contrast, when ZP2 has been proteolytically cleaved, sperm binding is disrupted.

To further study the effect of ZP2 cleavage in sperm-egg recognition, researchers at NIDDK have developed a transgenic mouse expressing human ZP2. Prior attempts using ZP2 knockout mice were unsuccessful because the produced eggs were not fertile *in vivo*. Transgenic ZP2 mice produced humanized zonae pellucida, and produced fertile eggs to which human sperm successfully and specifically bound. This mouse model contradicts previous notions that production of human transgenic ZP2 would adversely change the specificity of sperm binding.

Potential Commercial Applications:

- Transgenic eggs can be used in diagnostic functional assays to assess human sperm viability for reproductive technologies.
- Diagnostic assay can be extended to determine presence of male infertility in a variety of mammals, including pets, farm livestock, and zoological mammals.

Competitive Advantages:

- This ZP2 mice model produces eggs containing transgenic mammalian zona pellucida, which can successfully and specifically be fertilized with the corresponding mammalian sperm.
- Use in human infertility studies spares the use of a human egg for binding studies.

Development Stage:

- Prototype.
- Early-stage.
- *In vitro* data available.
- *In vivo* data available (animal).

Inventors: Tracy L. Rankin, Jenell S. Coleman, Olga Epifano, Tanya Hoodbhoy, Scott Turner, Jurrien Dean (all of NIDDK).

Publications:

1. Rankin TL, *et al.* Fertility and taxon-specific sperm binding persist after replacement of mouse sperm receptors with human homologs. *Dev Cell*. 2003 Jul;5(1):33–43. [PMID 12852850].
2. Gahlay G, *et al.* Gamete recognition in mice depends on the cleavage status of an egg's zona pellucida protein.

Science. 2010 Jul 9;329(5988):216–9. [PMID 20616279].

Intellectual Property: HHS Reference No. E–288–2011/0—Research Tool. Patent protection is not being pursued for this technology.

Related Technology: HHS Reference No. E–162–2011/0—Research Tool. Patent protection is not being pursued for this technology.

Licensing Contact: Lauren Nguyen-Antczak, Ph.D., J.D.; 301–435–4074; Lauren.Nguyen-antczak@nih.gov.

Englerin A: A Novel Renal Cancer Therapeutic Isolated From an African Plant

Description of Technology: Renal cell cancer of the kidney accounts for 13 thousand deaths per year, largely due to the ineffective treatment methods available. The current standard of care is limited to surgical resection of the diseased tissue and to date chemotherapy/radiation intervention has been of limited effectiveness.

Researchers at the NIH have isolated a series of novel natural compounds from the African plant *Phyllanthus engleri* that display potent anti-cancer properties, particularly in renal cancer cell lines. Englerin A displays renal cancer cell line growth inhibition *in vitro* and efficacy against renal and prostate cancer cell lines *in vivo*. The compound can be efficiently extracted from the plant, and recent work has described methods for the synthesis of Englerin A and novel analogs.

Further preclinical studies have yielded an optimized formulation for parenteral drug administration, the establishment of a method for measuring bioavailability, and modeling studies suggestive that Englerin A should be orally bioavailable.

Potential Commercial Applications: The new chemical entities can be potential cancer therapeutics, especially for renal cancer.

Competitive Advantages:

- Isolated compounds are specifically toxic to renal cancer cells, a disease with limited current chemotherapeutic options.

- Compounds are effective *in vivo* and have potential applications to other disease states.

- There is reasonable yield and recovery of the compounds from the natural product extracts.
- Recent work has identified efficient routes for synthesis of Englerin A.

Development Status:

- Pre-clinical.
- *In vitro* data available.
- *In vivo* data available (animal).

Inventors: John A. Beutler *et al.* (NCI).
Publications:

1. Ratnayake R, *et al.* Englerin A, a selective inhibitor of renal cancer cell growth, from *Phyllanthus engleri*. *Org Lett*. 2009 Jan 1;11(1):57–60. [PMID 19061394].
2. Li Z, *et al.* A brief synthesis of (–)-englerin A. *J Am Chem Soc*. 2011 May 4;133(17):6553–6. [PMID 21476574].
3. Akee R, *et al.* Chlorinated englerins with selective inhibition of renal cancer cell growth. *J Nat Prod*. 2012 Mar 23;75(3):459–63. [PMID 22280462].

Intellectual Property: HHS Reference No. E–064–2008/2—U.S. Patent Application No. 12/811,245 filed 29 Jul 2010.

Related Technology: HHS Reference No. E–042–2012/0—U.S. Provisional Application No. 61/584,526 filed 09 Jan 2012, “Use of Englerin A for the Treatment of Diabetes, Obesity and Other Diseases.”

Licensing Contact: Surekha Vathyam, Ph.D.; 301–435–4076; vathyams@mail.nih.gov.

Collaborative Research Opportunity: The National Cancer Institute Molecular Targets Development Program is seeking statements of capability or interest from parties interested in collaborative research to further develop, evaluate, or commercialize epoxy-guaiane cancer inhibitors. Please contact John D. Hewes, Ph.D. at 301–435–3121 or hewesj@mail.nih.gov for more information.

Dated: June 5, 2012.

Richard U. Rodriguez,

Director, Division of Technology Development and Transfer, Office of Technology Transfer, National Institutes of Health.

[FR Doc. 2012–14038 Filed 6–8–12; 8:45 am]

BILLING CODE 4140–01–P

DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Eunice Kennedy Shriver National Institute of Child Health & Human Development; Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material,

and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Child Health and Human Development Initial Review Group; Biobehavioral and Behavioral Sciences Subcommittee.

Date: June 25–26, 2012.

Time: 8:00 a.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Marriott Wardman Park Washington DC Hotel, 2660 Woodley Road, NW., Washington, DC 20008.

Contact Person: Marita R. Hopmann, Ph.D., Scientific Review Officer, Division of Scientific Review, Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH, 6100 Executive Blvd., Room 5B01, Bethesda, MD 20892, 301-435-6911, hopmannm@mail.nih.gov.

This notice is being published less than 15 days prior to the meeting due to the timing limitations imposed by the review and funding cycle.

(Catalogue of Federal Domestic Assistance Program Nos. 93.864, Population Research; 93.865, Research for Mothers and Children; 93.929, Center for Medical Rehabilitation Research; 93.209, Contraception and Infertility Loan Repayment Program, National Institutes of Health, HHS)

Dated: June 4, 2012.

Jennifer S. Spaeth,

Director, Office of Federal Advisory Committee Policy.

[FR Doc. 2012-14139 Filed 6-8-12; 8:45 am]

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

National Institute on Aging; Notice of Closed Meetings

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meetings.

The meetings will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute on Aging Special Emphasis Panel; Healthy Aging and the Life Course.

Date: June 20, 2012.

Time: 9:00 a.m. to 12:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institute on Aging, Gateway Building, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, (Telephone Conference Call).

Contact Person: Jeannette L. Johnson, Ph.D., Scientific Review Officer, National Institutes on Aging, National Institutes of Health, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, 301-402-7705. JOHNSONJ9@NIA.NIH.GOV

This notice is being published less than 15 days prior to the meeting due to the timing limitations imposed by the review and funding cycle.

Name of Committee: National Institute on Aging Special Emphasis Panel; Clinical Trials Support.

Date: June 22, 2012.

Time: 2:30 p.m. to 5:00 p.m.

Agenda: To review and evaluate contract proposals.

Place: National Institute on Aging, Gateway Building, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, (Telephone Conference Call).

Contact Person: Rebecca J. Ferrell, Ph.D., Scientific Review Officer, National Institute on Aging, Gateway Building Rm. 2C212, 7201 Wisconsin Avenue, Bethesda, MD 20892, 301-402-7703. ferrellrj@mail.nih.gov.

Name of Committee: National Institute on Aging Special Emphasis Panel; Stress and Aging.

Date: July 9, 2012.

Time: 9:00 a.m. to 1:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institute on Aging, Gateway Building, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, (Telephone Conference Call).

Contact Person: Alicja L. Markowska, Ph.D., DSC, Scientific Review Branch, National Institute on Aging, 7201 Wisconsin Avenue, Suite 2c212, Bethesda, MD 20892, 301-496-9666. markowska@nia.nih.gov

Name of Committee: National Institute on Aging Special Emphasis Panel; Genetics of Lifespan.

Date: July 11, 2012.

Time: 1:00 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institute on Aging, Gateway Building, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, (Telephone Conference Call).

Contact Person: Alicja L. Markowska, Ph.D., DSC, Scientific Review Branch, National Institute on Aging, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, 301-496-9666. markowska@nia.nih.gov

Name of Committee: National Institute on Aging Special Emphasis Panel; Health, SES, and Aging.

Date: July 18, 2012.

Time: 1:00 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institute on Aging, Gateway Building, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, (Telephone Conference Call).

Contact Person: Alfonso R. Latoni, Ph.D., Deputy Chief and Scientific Review Officer, Scientific Review Branch, National Institute on Aging, 7201 Wisconsin Avenue, Suite 2C218, Bethesda, MD 20892, 301-402-7702. Alfonso.Latoni@nih.gov

Name of Committee: National Institute on Aging Special Emphasis Panel; HIV and Aging.

Date: July 31, 2012.

Time: 1:00 p.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: National Institute on Aging, Gateway Building, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, (Telephone Conference Call).

Contact Person: Alicja L. Markowska, Ph.D., DSC, Scientific Review Branch, National Institute on Aging, 7201 Wisconsin Avenue, Suite 2C212, Bethesda, MD 20892, 301-496-9666. markowska@nia.nih.gov (Catalogue of Federal Domestic Assistance Program Nos. 93.866, Aging Research, National Institutes of Health, HHS)

Dated: June 4, 2012.

Jennifer S. Spaeth,

Director, Office of Federal Advisory Committee Policy.

[FR Doc. 2012-14118 Filed 6-8-12; 8:45 am]

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health

Eunice Kennedy Shriver National Institute of Child Health & Human Development; Notice of Closed Meeting

Pursuant to section 10(d) of the Federal Advisory Committee Act, as amended (5 U.S.C. App.), notice is hereby given of the following meeting.

The meeting will be closed to the public in accordance with the provisions set forth in sections 552b(c)(4) and 552b(c)(6), Title 5 U.S.C., as amended. The grant applications and the discussions could disclose confidential trade secrets or commercial property such as patentable material, and personal information concerning individuals associated with the grant applications, the disclosure of which would constitute a clearly unwarranted invasion of personal privacy.

Name of Committee: National Institute of Child Health and Human Development Initial Review Group, Obstetrics and Maternal-Fetal Biology Subcommittee.

Date: June 26, 2012.

Time: 8:30 a.m. to 5:00 p.m.

Agenda: To review and evaluate grant applications.

Place: Doubletree Hotel Bethesda (Formerly Holiday Inn Select), 8120 Wisconsin Avenue, Bethesda, MD 20814.