

Urease

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Urease is an enzyme that catalyzes the hydrolysis of urea into carbon dioxide and ammonia. The reaction occurs as follows: $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{CO}_2 + 2\text{NH}_3$ In 1926 James Sumner showed that urease is a protein. Urease is found in bacteria, yeast and several higher plants. Characteristics: *Active site metal: nickel* Molecular weight: 480 kDa or 545 kDa for Jack Bean Urease . * Optimum pH: 7.4* Optimum Temperature: 60 degrees Celsius* Enzymatic specificity: urea and hydroxyurea* Inhibitors: heavy metals The multi-subunit enzyme usually has a 3:3 stoichiometry with a 2-fold symmetric structure . An exceptional urease is found in *Helicobacter pylori*, which combines four of the regular six subunit enzymes in an overall tetrahedral assembly of 24 subunits . This supra-molecular assembly is thought to confer additional stability for the enzyme in this organism, which functions to produce ammonia in order to neutralise gastric acid. The presence of urease is used in the diagnosis of *Helicobacter* species. ([From the Wikipedia article Urease](#) .)

Recent Publications on Urease:



- [Biosurfactant Production by Halotolerant *Rhodococcus fascians* from Casey Station, Wilkes Land, Antarctica.](#)
*Isolate A-3 from Antarctic soil in Casey Station, Wilkes Land, was...*6th February, 2010
The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of- *Curr Microbiol.* 2010 Feb 5. ([DOI Direct Link](#))
- [Expression of *UreB* and *HspA* of *Helicobacter pylori* in silkworm pupae and identification of its immunogenicity.](#)
*For mass production of urease B subunit (UreB) and heat shock protein A...*4th February, 2010
School of Pre-clinical Medicine and Biological Science, Medical College,- *Mol Biol Rep.* 2010 Feb 3. ([DOI Direct Link](#))
- [Functional shifts in unvegetated, perhumid, recently-deglaciated soils do not correlate with shifts in soil bacterial community composition.](#)
*Past work in recently deglaciated soils demonstrates that microbial...*4th February, 2010
Department of Ecology and Evolutionary Biology, University of Colorado,- *J Microbiol.* 2009 Dec;47(6):673-81. Epub 2010 Feb 4. ([DOI Direct Link](#))
- [Nitrogen fixation capacity of *Azotobacter* spp. strains isolated from soils in different ecosystems and relationship between them and the microbiological properties of soils.](#)
*The objectives of this study were to count and culture Azotobacter spp. in...*2nd February, 2010
Department of Soil Science, Faculty of Agriculture, Ondokuz Mayıs- *J Environ Biol.* 2009 Jan;30(1):73-82.
- [Development of an inhibitive enzyme assay for copper.](#)
*In this work the development of an inhibitive assay for copper using the...*2nd February, 2010
Department of Biochemistry, Faculty of Biotechnology and Biomolecular- *J Environ Biol.* 2009

- Jan;30(1):39-44.
- [The development of an inhibitive determination method for zinc using a serine protease.](#)
*A new inhibitive heavy metals determination method using trypsin has been...*2nd February, 2010
Department of Biochemistry, Faculty of Biotechnology and Biomolecular- J Environ Biol. 2009
Jan;30(1):17-22.
 - [Substrate Catalysis Enhances Single-Enzyme Diffusion.](#)
*We show that diffusion of single urease enzyme molecules increases in the...*30th January, 2010
Departments of Bioengineering and Chemistry, The Pennsylvania State- J Am Chem Soc. 2010 Jan
28. ([DOI Direct Link](#))
 - [Two stomach-originated lactobacillus strains improve Helicobacter pylori infected murine gastritis.](#)
*AIM: To investigate the potential anti-Helicobacter pylori (H. pylori) and...*27th January, 2010
Department of Gastroenterology, The Second Xiangya Hospital of Central- World J Gastroenterol.
2010 Jan 28;16(4):445-52.
 - [Evolutionary aspects of urea utilization by fungi.](#)
*Abstract The higher fungi exhibit a dichotomy with regard to urea...*27th January, 2010
School of Biological Sciences, University of Nebraska, Lincoln, NE, USA.- FEMS Yeast Res. 2010 Jan
21. ([DOI Direct Link](#))
 - [The determination of uric acid in urine--forgotten problems rediscovered in an external quality assessment scheme.](#)
*This article mainly describes the effects of boric acid and borates often...*27th January, 2010
Gesellschaft zur Forderung der Qualitatssicherung im medizinische- Clin Lab. 2009;55(9-10):341-52.
 - [Microbial population dynamics and enzyme activities in composting processes with different starting materials.](#)
*A biological comparison based on differences in the starting material for...*26th January, 2010
Unidad de Microbiologia, Departamento de Biologia Aplicada, Escuela- Waste Manag. 2010 Jan 20. ([DOI Direct Link](#))
 - [The effect of sucrose on plaque and saliva urease levels in vivo.](#)
*OBJECTIVE: Dietary sugar exposures induce an immediate drop of the plaque...*26th January, 2010
University of Puerto Rico, School of Dental Medicine, San Juan, Puerto- Arch Oral Biol. 2010 Jan 20. ([DOI Direct Link](#))
 - [Expression and display of UreA of Helicobacter acinonychis on the surface of Bacillus subtilis spores.](#)
*ABSTRACT: BACKGROUND: The bacterial endospore (spore) has recently been...*20th January, 2010
- Microb Cell Fact. 2010 Jan 18;9(1):2. ([DOI Direct Link](#))
 - [A comparison amongst three rapid urease tests to diagnose Helicobacter pylori infection in 375 consecutive dyspeptic.](#)
*Rapid diagnostic tools for Helicobacter pylori are important in endoscopy....*19th January, 2010
Department of Internal Medicine and Gastroenterology, S. Orsola Hospital,- Intern Emerg Med. 2010
Jan 16. ([DOI Direct Link](#))
 - [Molecular modeling of Helicobacter pylori arginase and the inhibitor coordination interactions.](#)
*Arginase of the Helicobacter pylori hydrolyzes L-arginine to L-ornithine...*19th January, 2010
Department of Medicinal Chemistry, Faculty of Pharmacy, 16 Azar Ave.,- J Mol Graph Model. 2009
Dec 29. ([DOI Direct Link](#))

Urease Clinical Trials:



- [Feasibility Study of Phototherapy System to Treat H Pylori](#)



Urease Patents:

- 7622278- [Compositions and methods for diagnosing or treating psoriasis](#)
- 7629159- [Nocardioides FERM BP-10405 capable of degrading organochlorine pesticide PCNB](#)
- 7629295- [Determination of a specific immunoglobulin using multiple antigens](#)
- 7629308- [Methods relating to muscle selective calcineurin interacting protein \(MCIP\)](#)
- 7629327- [Chlamydia 60 Kda CRMP antigens and vaccine uses](#)
- 7632502- [Cell wall mannoproteins and active epitopes from Candida albicans and antibodies recognizing them](#)
- 7635572- [Methods for conducting assays for enzyme activity on protein microarrays](#)
- 7635749- [Methods and compositions for prolonging elimination half-times of bioactive compounds](#)
- 7637229- [Breakable odor control additive for animal litter having gypsum composition barrier coating](#)
- 7638269- [Viral capsid assembly intermediates and methods of production](#)
- 7638277- [Transmembrane serine protease overexpressed in ovarian carcinoma and uses thereof](#)
- 7629141- [Essential and important genes of Pseudomonas aeruginosa and the use thereof to design or identify antibacterial agents](#)
- 7629136- [Assays and methods using biomarkers](#)
- 7629133- [Controlled transport through multiple reversible interaction point membranes](#)
- 7622294- [Methods for detecting target analytes and enzymatic reactions](#)
- 7622296- [Apparatus and method for multiplex analysis](#)
- 7622487- [Piperidine derivative, process for producing the same, and use](#)
- 7622551- [Leukocyte stimulating peptides](#)
- 7622557- [Antibodies having binding specificity for the extracellular domain of a breast cancer resistance protein \(BCRP\)](#)
- 7622558- [Antibodies which are directed against the Marburg I polymorphism of factor VII-activating protease \(FSAP\), and their preparation and use](#)
- 7625561- [Diabody which specifically binds Streptococcus surface antigen I/II and methods of use thereof](#)
- 7625572- [Transformed bacterium lacking selectable marker and overexpression of antigens in mycobacteria](#)
- 7625859- [HER-2 binding antagonists](#)
- 7625873- [Antisense antibacterial method and compound](#)
- 7638282- [Genes of an otitis media isolate of nontypeable Haemophilus influenzae](#)
- 7641904- [IL-32 monoclonal antibodies and uses thereof](#)
- 7649023- [Biodegradable block copolymeric compositions for drug delivery](#)
- 7651705- [Herbal composition for the treatment of gastric ulcer](#)
- 7655229- [Anti-FC-gamma RIIIB receptor antibody and uses therefor](#)
- 7655238- [Compositions and methods for enhancing the immunogenicity of antigens](#)
- 7655246- [Chlamydia protein, gene sequence and uses thereof](#)
- 7655396- [Methods for detecting receptor modulator activity](#)
- 7655424- [Method for diagnosing and distinguishing stroke and diagnostic devices for use therein](#)
- 7655450- [Polypeptide having amidase activity and gene thereof](#)
- 7655452- [Brevibacillus choshinensis and process for producing protein with use of the microbe as host](#)
- 7655828- [Disposable absorbent article having a patterned odor/antimicrobial reduction layer](#)
- 7648966- [Mannose-6-phosphonate compounds for the treatment of inflammatory diseases](#)
- 7648840- [Diagnosis of conditions associated with decreased arginine bioavailability](#)

- 7648698- [Vaccine for veterinary and human medicine prophylaxis and therapy](#)
- 7641911- [Immunological adjuvant compositions](#)
- 7642239- [Inhibition of placenta growth factor \(PLGF\) mediated metastasis and/or angiogenesis](#)
- 7642395- [Composition and wipe for reducing viscosity of viscoelastic bodily fluids](#)
- 7642397- [Absorbent articles comprising a bodily exudate modifying agent and a skin care formulation](#)
- 7643943- [Methods for monitoring drug activities in vivo](#)
- 7645577- [Group B streptococcus polypeptides nucleic acids and therapeutic compositions and vaccines thereof](#)
- 7645584- [Biomarkers of liver injury](#)
- 7645857- [Methods of indentifying modulators of the FGF receptor](#)
- 7648534- [Carpet treated for resistance to odors and contaminants and method](#)
- 7648677- [Method for operating a reservoir-based sensor device](#)
- 7655838- [Insect inhibitory Bacillus thuringiensis proteins, fusions, and methods of use therefor](#)

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Send comments and feedback to:

Peter Barfoot Managing Director, BioPortfolio Ltd.

UK Tel: (+44) 1300 321501

USA Voicemail and Fax: (+1) 415 680 2472

[Peter Barfoot peter.barfoot@bioportfolio.com](mailto:peter.barfoot@bioportfolio.com)

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