Improving emerging technologies content on Wikipedia

or, what to do when someone is wrong on the Internet

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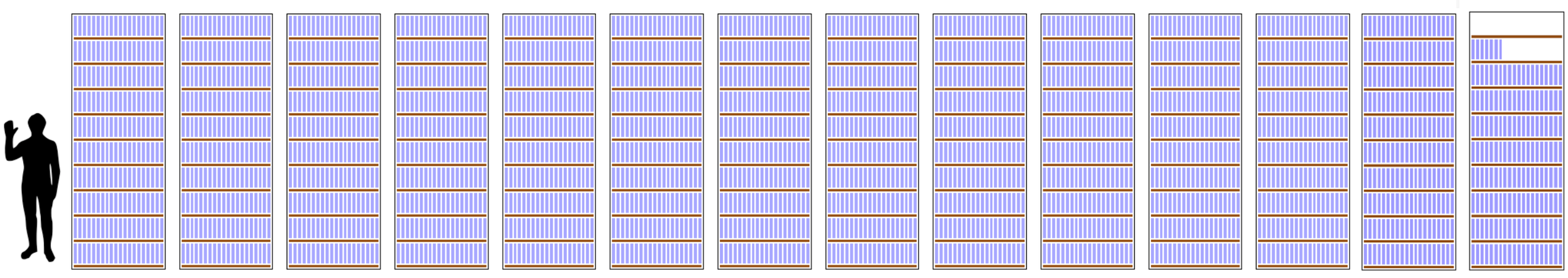
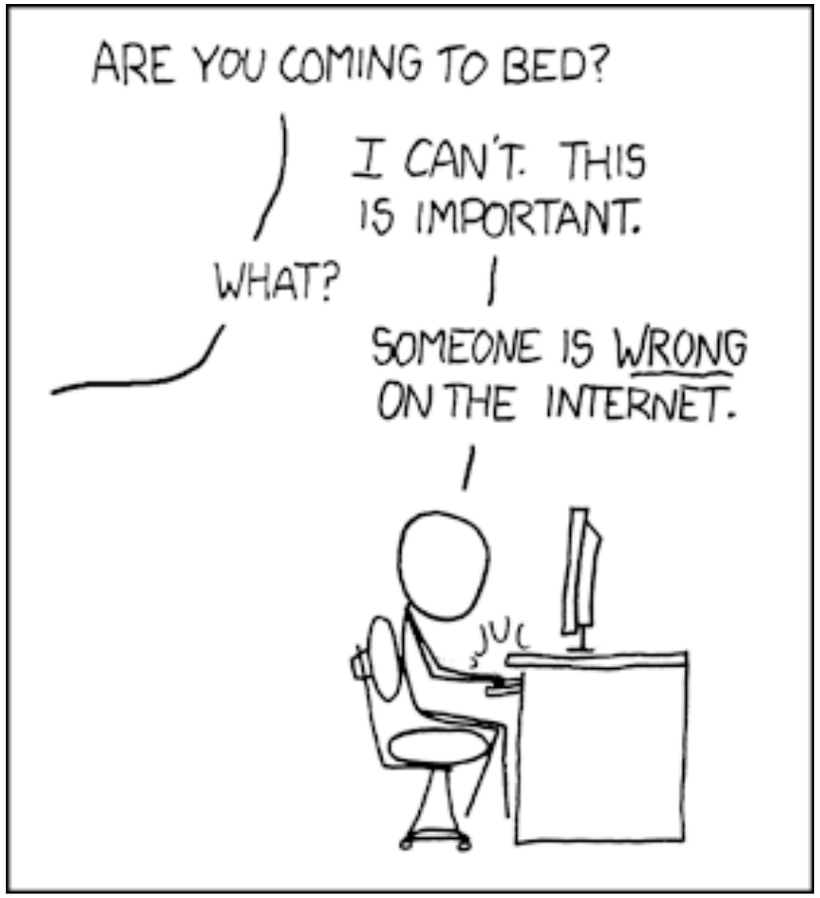
What is Wikipedia?

- Wikipedia is the largest general reference work ever written.
  - Over 49 million articles in 291 languages
  - Over 5.7 million articles in English (text would fill 2767 printed volumes)
  - Over 50 million images and other media files
  - Over 52 million data items

- Wikipedia is written (almost) entirely by volunteers.



Why improve Wikipedia?

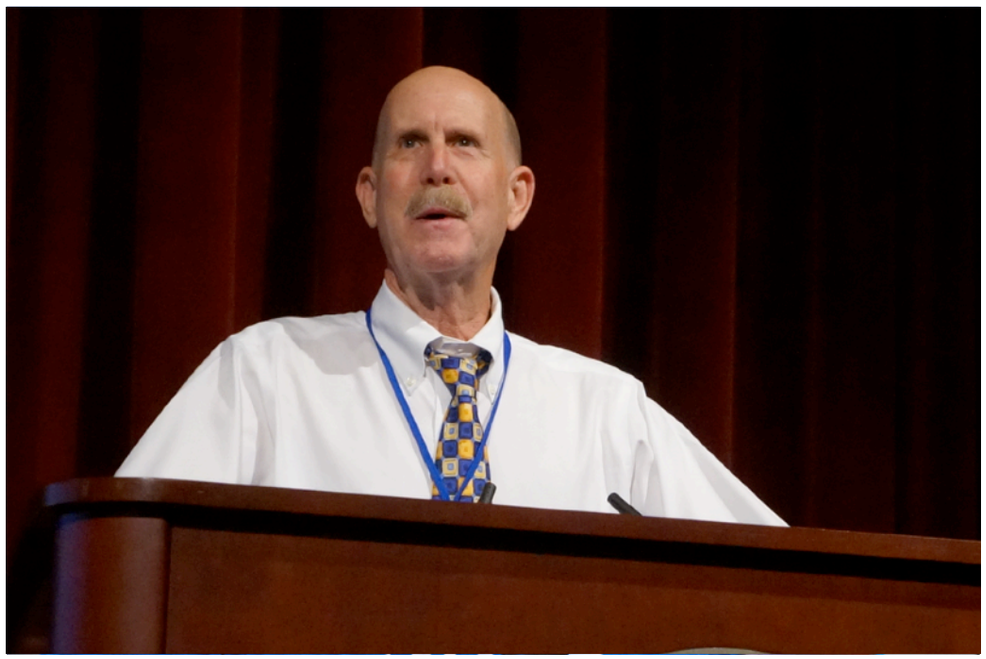


xkcd by Randall Munroe
https://xkcd.com/386/ (CC BY-NC 2.5)

“I have always said that we are more than just a highly technical effort—Wikipedia is a moral statement about the kind of world we would like to live in.”

—Jimmy Wales, cofounder of Wikipedia

https://en.wikipedia.org/w/index.php?title=User_talk:Jimbo_Wales&diff=660815917
File:Wikimedia Conference 2013 - board meeting 10.JPG



"Our challenge at NIOSH is to put our research into practice… As we know from our experience that people are turning to Wikipedia for information, we want to make sure that the information there is complete, up to date, and free of errors."

—John Howard, Director of NIOSH

https://www.cdc.gov/niosh/enews/enewsv14n9.html
File:WikiConference USA 2015 144.JPG

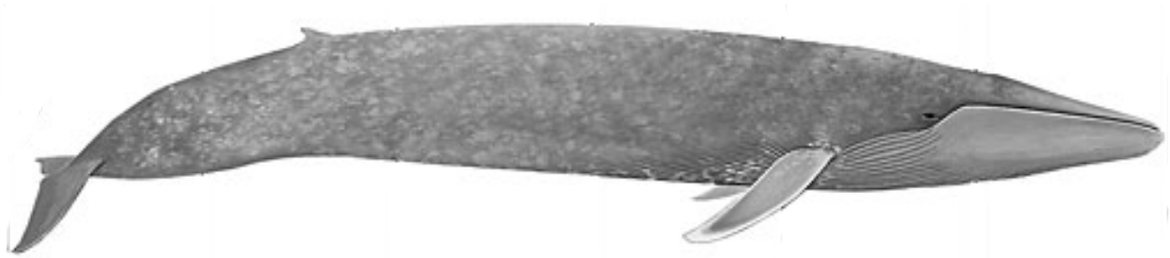
Motivation
Expanding the reach of information

NIOSH website

- ✓ 150,000 web pages
- ✓ 8 million visits per year

English Wikipedia

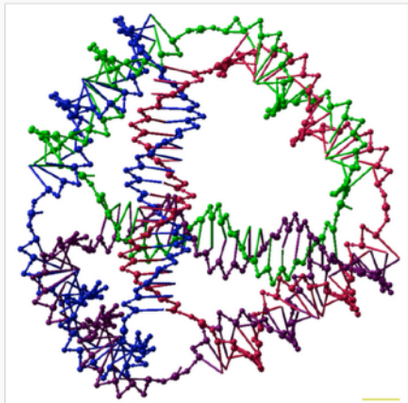
- ✓ 5.5 million articles
- ✓ 260 million views (not robots) per day
- ✓ 7.7 billion page views per month
- ✓ Almost 50% of these via mobile



DNA nanotechnology

From Wikipedia, the free encyclopedia

DNA nanotechnology is the design and manufacture of artificial nucleic acid structures for technological uses. In this field, nucleic acids are used as non-biological engineering materials for nanotechnology rather than as the carriers of genetic information in living cells. Researchers in the field have created static structures such as two- and three-dimensional crystal lattices, nanotubes, polyhedra, and arbitrary shapes, as well as functional devices such as molecular machines and DNA computers. The field is beginning to be used as a tool to solve basic science problems in structural biology and biophysics, including applications in crystallography and spectroscopy for protein structure determination. Potential applications in molecular scale electronics and nanomedicine are also being investigated.



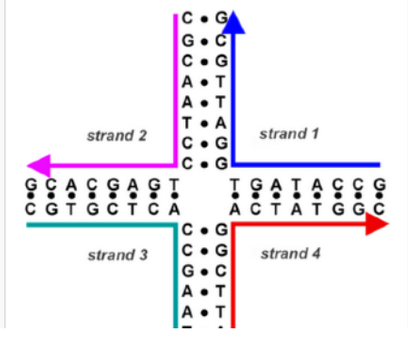
DNA nanotechnology involves the creation of artificial, designed nanostructures out of nucleic acids, such as this DNA tetrahedron.[1] Each edge of the tetrahedron is a 20 base pair DNA double helix, and each vertex is a three-arm junction. The 4 DNA strands that form the 4 tetrahedral faces are color-coded.

The conceptual foundation for DNA nanotechnology was first laid out by Nadrian Seeman in the early 1980s, and the field began to attract widespread interest in the mid-2000s. This use of nucleic acids is enabled by their strict base pairing rules, which cause only portions of strands with complementary base sequences to bind together to form strong, rigid double helix structures. This allows for the rational design of base sequences that will selectively assemble to form complex target structures with precisely controlled nanoscale features. A number of assembly methods are used to make these structures, including tile-based structures that assemble from smaller structures, folding structures using the DNA origami method, and dynamically reconfigurable structures using strand displacement techniques. While the field's name specifically references DNA, the same principles have been used with other types of nucleic acids as well, leading to the occasional use of the alternative name **nucleic acid nanotechnology**.

Contents [show]

Fundamental concepts [edit]

Properties of nucleic acids [edit]



Nanotechnology is often defined as the study of materials and devices with features on a scale below 100 nanometers. DNA nanotechnology, specifically, is an example of bottom-up molecular self-assembly, in which molecular components spontaneously organize into stable structures; the particular form of these structures is induced by the physical and chemical properties of the components selected by the designers.[4] In DNA nanotechnology, the component materials are strands of nucleic acids such as DNA; these strands are often synthetic and are almost always used outside the context of a living cell. DNA is well-suited to nanoscale construction because the binding between two nucleic acid strands depends on simple base pairing rules which are well understood, and form the specific nanoscale structure of the nucleic acid double helix. These qualities make the assembly of nucleic acid structures easy to control through nucleic acid design. This property is absent in other materials used in

التقنية النانوية للحمض النووي الريبوزي منقوص الأكسجين

من ويكيبيديا، الموسوعة الحرة

تقنية النانو

تاريخ تقنية النانو
تأثيرات تقنية النانو
تطبيقات تقنية النانو
تنظيم تقنية النانو
منظمات تقنية النانو
خيال علمي لتقنية النانو
قائمة مواضيع النانو
هندسة نانوية
مواد نانوية
فولرين
فرافين
أنابيب نانوية كربونية

تمثل **تقانة الدنا النانوية** أحد فروع تقانة الصغائر التي تعتمد على مجموعة سمات التعرف الجزيئي (بالإنجليزية: molecular recognition) للحمض النووي (دنا) بالإضافة إلى باقي الأحماض النووية بهدف تصنيع هياكلٍ اصطناعيةٍ مصممةٍ من الدنا ليتم استخدامها بعد ذلك في الأغراض التقنية المختلفة. مما يدعونا إلى معرفة أن الدنا يُستَخدَمُ هنا كمادةٍ بنائيةٍ بدلاً من كونه مجرد حاملٍ وناقلٍ للمعلومات الوراثية، مما يجعل ذلك العلم أحد أمثلة علم الاحياء النانوي. ولتقانة الدنا الحيوية تطبيقاتٍ عدةٍ في مجال التجميع الذاتي الجزيئي وحوسبة الدنا.

فعلى الرغم من أن الدنا غالباً ما يُعتبر ناقل وحامل المعلومات الوراثية في الخلايا الحية في إطار علم الأحياء الجزيئي، فإن تقانة الدنا الجزيئية تهتم بالدنا فردياً كمادةٍ وكمركبٍ كيميائي، وغالباً ما تتبعه خارج أي إطارٍ حيوي. ومن ثم، فتقانة الدنا الجزيئية تستفيد من حقيقة أنه بسبب خصوصية زوج واتسون كريك القاعدي، فإن أجزاءً وقطعاً فقط من ضفائر الدنا، والتي تُعدُّ تكميليةً لكلٍ منها الآخر، سترتبط بكلٍ منها الأخرى بهدف تشكيل حلزون الدنا المزدوج (بالإنجليزية: Nucleic acid double helix). هذا ويحاول علم تقانة الدنا النانوي تصميم نسبياً (بالإنجليزية: Nucleic acid design) ضفائر الدنا ومن ثم فالقطع المرغوبة فقط من كل ضفيرةٍ ستتجمع في الأماكن الصحيحة لتكوين هيكلاً مستهدفاً مرغوباً.

هذا ويبد أن هذا المجال يُطلق عليه اسم (تقانة الدنا النانوية)، إلا أن مبادئه تنطبق كذلك وبصورةٍ متكافئةٍ على الأحماض النووية الأخرى والتي منها الحمض الريبي النووي وحمض الببتيد النووي (بالإنجليزية: Peptide Nucleic Acid)، هذا بالإضافة إلى أنه تم إنتاج هياكلٍ ونبائياتٍ تندمجها معاً. مما دعى إلى الإشارة إلى هذا المجال على أنه **تقانة الحمض النووي النانوية** جراء ذلك السبب.

محتويات [أظهر]

مفاهيم أساسية [عدل]

يقوم مجال تقانة الدنا النانوية بإنتاج هياكلٍ مركبةٍ من الأحماض النووية من خلال الاستفادة من خصوصية الزوج القاعدي لجزيئات

ДНК нанотехнология

от Уикипедия, свободната енциклопедия

ДНК нанотехнологията е съвкупност от методи за проектиране и производство на изкуствени структури от нуклеинови киселини, предназначени за използване като небиологичен материал в нанотехнологията, а не като носител на генетична информация в живите клетки.

Изследователите в областта на ДНК нанотехнологията създават статични структури, като двуизмерни и триизмерни кристални решетки, нанотръби, многостени и произволни форми, както и устройства като молекулярни машини и ДНК компютри. ДНК нанотехнологията започва да се използва за решаване на въпроси на фундаменталната наука в области като структурната биология и биофизиката, включително чрез методи изследване на структурата на протеините като кристалография и спектроскопия. Проучват се и възможни приложения в молекулярната електроника и наномедицината.

ДНК нанотехнологиите включват създаването на изкуствени наноструктури от нуклеинови киселини, като показания на схемата ДНК тетраедър.[1] Всеки от ръбовете на тетраедъра е базова двойка от ДНК нуклеотиди.

Бележки [редактиране | редактиране на кода]

1. ↑ Goodman 2005, с. 1661-1665.

Цитирани източници

- ((en)) Goodman, Russel P. и др. Rapid chiral assembly of rigid DNA building blocks for molecular nanofabrication. // *Science* 310 (5754). 9 December 2005. DOI:10.1126/science.1120367. с. 1661–1665.

Тази статия, свързана с науката, все още е мъниче. Помогнете на Уикипедия, като я редактирате и разширите.

Nanotecnologia de l'ADN

La **nanotecnologia de l'ADN** és una branca de la nanotecnologia que utilitza les propietats del reconeixement molecular de l'ADN i altres àcids nucleics per a crear estructures artificials d'ADN dissenyades amb propòsits tecnològics. En aquest camp, l'ADN és utilitzat no tant com a portador d'informació genètica, sinó com a material estructural: n'és un exemple la bionanotecnologia. La nanotecnologia de l'ADN té aplicacions en l'autoensamblatge molecular i en la computació basada en l'ADN.

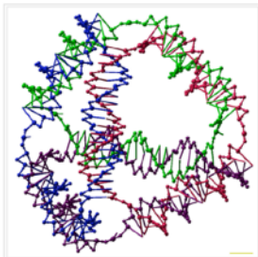
Tot i que normalment, en el context de biologia molecular, l'ADN és considerat com el portador de la informació genètica en cèl·lules vives, la nanotecnologia de l'ADN considera l'ADN únicament com a material i producte químic, utilitzant-lo, en general, fora del context biològic. La nanotecnologia de l'ADN utilitza el fet que, degut a l'especificitat dels parells de bases del model de Watson-Crick, només les porcions de cadenes que són complementàries entre si s'uneixen per a formar dúplexs d'ADN. La nanotecnologia de l'ADN intenta fer unions entre diverses cadenes d'ADN a través del disseny racional de tal manera que les porcions desitjades de cada cadena s'uneixin en la posició correcta per a obtenir una estructura desitjada, un procés que s'anomena disseny d'àcids nucleics.

Tot i que el camp s'anomena nanotecnologia de l'ADN, els principis que predica poden ser igualment aplicats a altres àcids nucleics com poden ser l'ARN i l'APN. Per aquesta raó el camp també pot ser anomenat com nanotecnologia dels àcids nucleics.

Taula de continguts [mostra]

Conceptes fonamentals [modifica | modifica el codi]

La nanotecnologia de l'ADN crea estructures complexes a partir dels àcids nucleics utilitzant l'especificitat de l'aparellament de bases en aquest tipus de molècules. L'estructura de la molècula d'àcid nucleic consisteix en una seqüència de nucleòtids, distingits per la base nitrogenada per la que estan formats. Les quatre bases que poden formar una molècula d'ADN són l'adenina (A), la citosina (C), la



La nanotecnologia de l'ADN té l'objectiu de construir nanoestructures artificials i dissenyades a partir d'àcids nucleics, tals com aquest tetraedre d'ADN.[1] Cada extrem del tetraedre correspon a una doble hèlix d'ADN de 20 parells de bases, mentre que cada vèrtex és una unió de tres braços.

DNA තැනෝ තාක්ෂණය

විකිපීඩියා, නිදහස් විශ්වකෝෂය වෙතින්

DNA තැනෝ තාක්ෂණය යනු තැනෝ තාක්ෂණයේ උප අංශයකි. එහි දී DNA හා අනෙකුත් න්‍යෂ්ටික අම්ලවල ආවේණික අණු හඳුනාගැනීමේ ගුණ යොදා ගෙන DNA මඟින් පාලනය කළ හැකි නව ව්‍යුහ නිර්මාණය කරයි. එමනිසා DNA ජෛව තැනෝ තාක්ෂණයට උදාහරණයක් බවට පත් කරමින් ජෛව නොරතුරු වාහකයක් ලෙස නොව ව්‍යුහාත්මක ද්‍රව්‍යයක් ලෙස භාවිතා කරයි. මෙයට අණු ස්ව එකලස් වීමේ හා DNA පරිගණනයේ යෙදීම් ඇත.

DNA අණුවේ සිව්බාහු සන්ධිය [සංස්කරණය කරන්න]

වම - ක්‍රමානුරූප දකුණ - වඩාත් ප්‍රායෝගික ආකෘතියක් එකිනෙකට වෙන් වූ තනි DNA පොට හතර එකිනෙකට වෙනස් වර්ණවලින් දක්වා ඇත.

ද්විත්ව හරස්මාරු (DX) අණුවක්. මෙම අණුව තනි DNA පොට පහකින් යුක්ත වන අතර එමඟින් සමාන්තර නොවන ද්විත්ව හෙලිත්සීය වසම් දෙකක් ඇති කරයි. ඒවා රූපයෙහි වමේ හා දකුණේ දැක්වේ. එහි හරස් මාරු ලක්ෂය දෙකක් පවතින අතර ඒවායේ දී පොටවල් එක් වසමක සිට අනෙක් වසමට මාරු වේ. 2004 මාර්ච් ගෙන් ගත් රූපයක්.

DNA තැනෝ තාක්ෂණය ප්‍රයෝජනවත් ගුණවලින් යුක්තව DNA සංකීර්ණ සෑදීම සඳහා අතු බෙදුනු DNA ව්‍යුහ භාවිතා කරයි. සාමාන්‍යයෙන් DNA රේඛීය අණුවකි. එහි අක්ෂය අතු නොබෙදී පවතී. කෙසේ නමුත් සන්ධි සහිත වන පරිදි DNA අණු ද නිපදවිය හැකිය. උදාහරණ ලෙස එකිනෙකට අභිලම්භ නිවැරදි රටාවේ ඇති තනි DNA පටවල් 4කින් සිව් බාහු සන්ධියක් තැනිය හැකිය. වොට්සන් ක්‍රික් පාදම් යුගලනය නිසා ඩියුප්ලෙක්ස් DNA තැනීම සඳහා පොටෙහි එකිනෙකට අභිලම්භ කොටස් පමණක් එකිනෙකට සම්බන්ධ වේ. මෙම සිව් බාහු සන්ධිය හොලිඩේ සන්ධියක ස්ථිර ආකාරයකි.

වඩා සංකීර්ණ අණුවල දී ද සන්ධි භාවිතා කළ හැකිය. මෙයින් වඩාත් වැදගත් වන්නේ ද්විත්ව හරස් මාරු හෝ DX මාතිකාවයි.

DNA nanoteknolojisi

Vikipedi, özgür ansiklopedi

DNA nanoteknolojisi nanoteknolojinin bir alt sahasıdır, DNA ve diğer nükleik asitlerin moleküler tanıma özelliklerini kullanarak yeni moleküler yapılar oluşturmayı amaçlar. Bu sahada, DNA kalıtsal bilgi taşıyıcısı olarak değil, yapısal bir malzeme olarak kullanılır. Bunun uygulaması moleküler özbirleşme (İngilizce *self assembly*) ve DNA hesaplamasıdır.

İçindekiler [göster]

Tarih [değiştir | kaynağı değiştir]

M. C. Escher'in gravürü *Derinlik*
Nadrian Seeman'a ilham vermiş, üç boyutlu DNA örgüleri ile zor

DNA nanoteknoloji kavramı 1980'li yılların başlarında Nadrian Seeman tarafından icat edilmiştir.[1] Bir kristalograf olan Seeman, bazı moleküllerin kristalleştirilmesini sağlayacak şartların bulunmasının tahmine ve tesadüflere dayalı olmasından yılmıştı. 1980'de, M. C. Escher'in *Derinlik* adlı gravürü ona ilham vermiş, üç boyutlu bir DNA örgüsünün (latisin), kristallenmesi amaçlanan molekülleri yönledirebileceğini farkettirmiştir.[2][3] 1991'de Seeman'ın laboratuvarı, DNA'dan oluşan bir kübün sentezi hakkındaki raporunu yayımladı. Seeman, nano-ölçekli bu ilk üç boyutlu cisim için 1995'te Feynman Nanoteknoloji Ödülünü almıştır. Nano-kübün ardından, DNA'dan yapılmış kesik oktahedron gelmiş ama anlaşılmıştır ki bu cisimler üç boyutlu bir örgü oluşturabilecek kadar rijit değildir.[1][2]

Seeman daha rijit olan "DX" motifini geliştirmiş ve 1988'de Erik Winfree ile birlikte iki boyutlu DX "karo"larından oluşan iki boyutlu örgülerin oluşturulmasını yayımlamıştır. Bu karolara dayalı yapıların bir diğer avantajı, DNA hesaplamasının gerşekleştirilme olanağını sağlamalarıydı. Winfree ve Paul Rothemund 2004'te bunu gösterdiler ve bunun için 2006'da Feynman Nanoteknoloji Ödülü'nü paylaştılar.[1][2]

Bu saha dallanmaya devam etmektedir. İlk DNA makinası (bir girdinin etkisiyle yapısını değiştiren bir yapısal motif) 1999'da gösterilmiştir. Nanomimari 1967'de Seeman tarafından önerilmiştir ve 2006'da bu sahanın ilk uygulamaları gösterilmiştir. Gene 2006'da Rothemund ilk DNA origami tekniği ile, herhangi bir şekle sahip katlanmış DNA moleküllerinin kolaylıkla oluşturulabileceğini göstermiştir. 2009'da Seeman üç boyutlu bir örgü (kafes) sentezini yayımlamıştır, bu amaçta çalışmaya başlamasından nerdeyse otuz yıl sonra.

Temel kavramlar

DNA纳米技术 [编辑]

DNA纳米技术專門研究利用脱氧核糖核酸或其他核酸的分子性質（如自組裝的特性），来建構出可操控的新型奈米尺度結構或機械。在这个领域，核酸被用作非生物的材料而不是在活细胞中那样作为遗传信息的载体。严格的核酸碱基配对法则（使链上特定的碱基列相互连接以形成牢固的双螺旋结构）使这一技术成为可能。这一技术允许合理的碱基链设计，从而严格地组合形成具有精密控制的纳米级特性的复杂的目标结构。脱氧核糖核酸是常使用的优势材料，但包括其他核酸如核糖核酸和肽核酸也被用来构造结构，所以偶尔也用"核酸纳米技术"来概括这个领域。[2][3]

DNA纳米技术概念的基础最先由纳德里安·西曼（Nadrian Seeman）在1980年代早期阐述，在2000年后开始引起广泛的关注。这一领域的研究者已经构建了静止结构如二维和三维晶体结构、毫微管、多面体和其他任意的造型；和功能结构如纳米机器和DNA计算机。一些组建方法被用来构建拼装结构、折叠结构和动态可重构结构。现在，这种科技开始被用作解决在结构生物学和生物物理学中基础科学问题的工具；同时也被应用在结晶学和光谱学中来测定蛋白质结构。这项技术在分子电子学（molecular scale electronics）和纳米医学中的应用仍在研究中。

目录 [显示]

历史 [编辑]

File:Escher Depth.jpg
莫里茨·科内利斯·埃舍尔的木刻作品《Depth》。据说这幅画启发了西曼想到用DNA三维晶格为难结晶分子标定方向，这导致了DNA纳米技术的开始。

DNA纳米技术概念的基础最先由纳德里安·西曼（Nadrian Seeman）在八十年代早期阐述。[4]西曼的最初目的是创建一个三维的DNA晶格为其他大分子确定方向，这将去除获得纯净晶体的复杂过程，简化晶体学研究。据说他在意识到莫里茨·科内利斯·埃舍尔（M. C. Escher）的木刻Depth与北欧的六节点DNA间的共同点后，产生了这个想法。[5][6]在当时，一些自然地有分支的DNA结构已被人们知晓包括复制叉和可移动的霍利迪交叉，但西曼认为不可动的核酸节点可以通过正确的碱基序列设计消除组合分子的对称性来制造。那样这些不可动节点在原则上可以组合成稳固的晶格。第一篇阐明这个体系的论文于1982年发表，第一份试验证明于次年刊出。[7][8]

DNA纳米技术包括用核酸构建人工设计的结构，比如这个四面体。[1] 四面体的每个边都是20碱基对的脱氧核糖核酸双螺旋；每个顶点都是一个3支节点。组成四面体的4条脱氧核糖核酸链用不同的颜色加以分辨。

在1991年，西曼的实验室发布了一份对用DNA制成的立方体（第一个人工合成的三维核酸纳米结构）的分析报告。他因此获得1995年费曼纳米技术奖（Feynman Prize in Nanotechnology）。DNA截面八角体也随之诞生。然而，人们很快发现这些以可变节点作为顶点的多边形结构对构造伸展的三维晶格来说不够牢固。西曼发展了更为牢固的双交叉形（DX），在1998年与Erik Winfree的合作中发布了用DX拼接成的二维晶格。[5][4][9]这些拼接结构具有实施DNA计算（DNA computing）的能力。这一点已由Winfree和Paul Rothemund在他们2004年关于谢爾賓斯基三角形结构（Sierpinski gasket）的论文中证明，他们因此分享了2006年费曼纳米技术奖。Winfree的主要观点是DX砖可以当做王氏砖（Wang tiles）使用，也就是说他们的组合可进行计算。[4]对三维晶格的分析最终由西曼在2009年发表，为完成它西曼花了大约30年。[10]

Introduction

- NIOSH is the United States federal laboratory for health and safety in the workplace.
- Our mission includes not only laboratory research, but outreach to change work practice.

File:North America satellite globe.jpg, File:NIOSH Taft Laboratory Cincinnati 2017.jpg, File:NIOSH Byrd Laboratory Morgantown 2017.jpg

Types of contributions

- As a Wikipedian-in-Residence, I:
  - Directly improve Wikipedia articles and upload media on OSH topics
  - Train NIOSH staff in improving Wikipedia, and use their feedback to develop priorities
  - Connect Wikipedians with NIOSH resources

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- Hazard controls
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  - *Administrative controls* *4,372*
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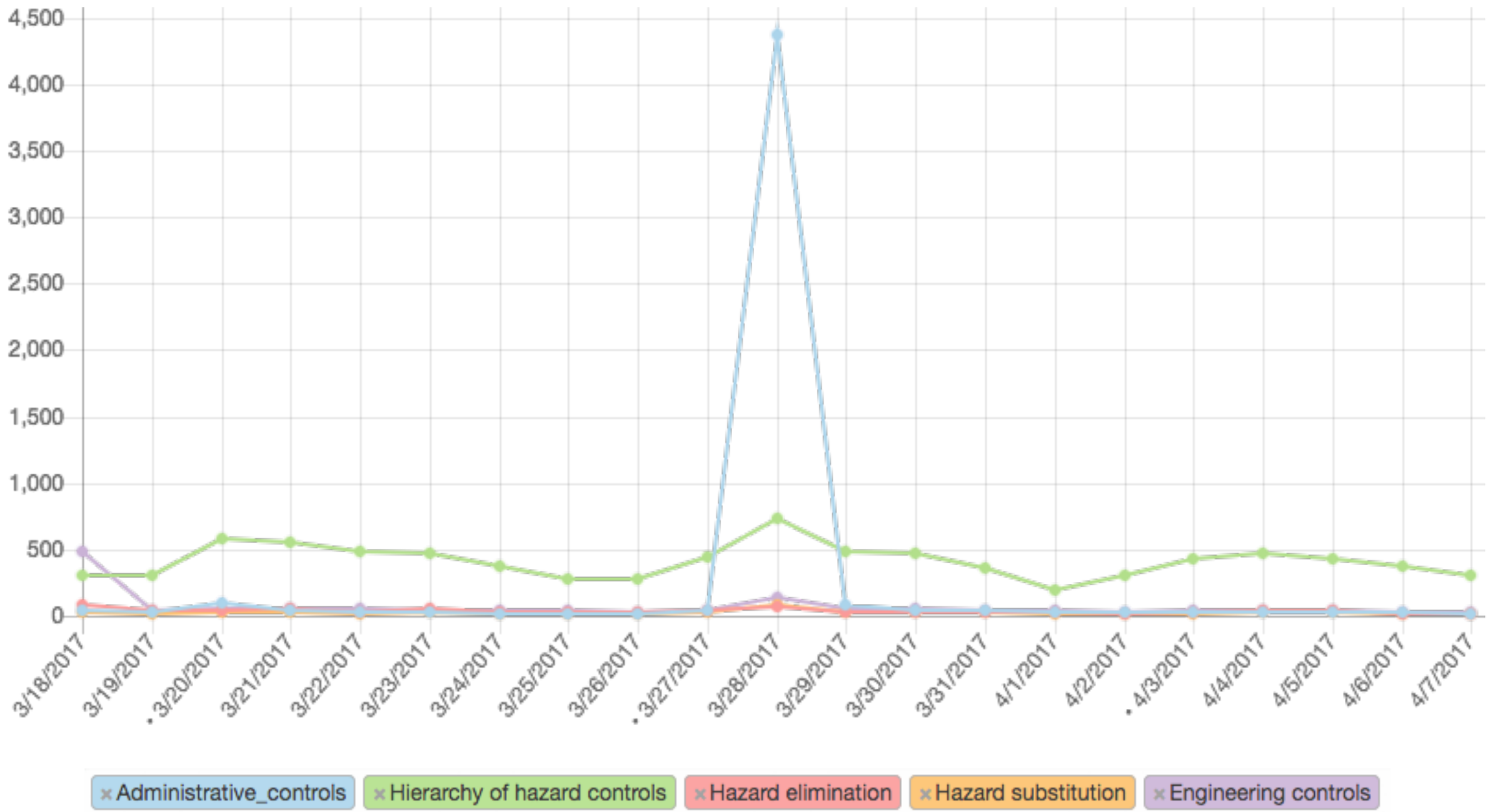
NIOSH articles at DYK



Health and safety hazards of nanomaterials

From Wikipedia, the free encyclopedia

The **health and safety hazards of nanomaterials** include the potential toxicity of various types of nanomaterials, as well as fire and dust explosion hazards. Because nanotechnology is a recent development, the health and safety effects of exposures to nanomaterials, and what levels of exposure may be acceptable, are subjects of ongoing research. Of the possible hazards, inhalation exposure appears to present the most concern, with animal studies showing pulmonary effects such as inflammation, fibrosis, and carcinogenicity for some nanomaterials. Skin contact and ingestion exposure, and dust explosion hazards, are also a concern.

Guidance has been developed for hazard controls that are effective in reducing exposures to safe levels, including substitution with safer forms of a nanomaterial, engineering controls such as proper ventilation, and personal protective equipment as a last resort. For some materials, occupational exposure limits have been developed to determine a maximum safe airborne concentration of nanomaterials, and exposure assessment is possible using standard industrial hygeine sampling methods. An ongoing occupational health surveillance program can also help to protect workers.

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Part of a series of articles on the
Impact of nanotechnology

Health and safety
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Nanotechnology portal

V·T·E

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Workplace health surveillance
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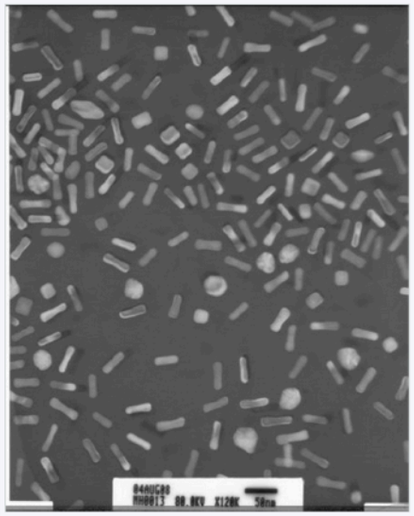
Prevention through design

Characterization of nanoparticles

From Wikipedia, the free encyclopedia

The **characterization of nanoparticles** is a branch of nanometrology that deals with the characterization of physical and chemical properties of nanoparticles. Nanoparticles have at least one primary external dimension of less than 100 nanometers, and are often engineered for their unique properties. Nanoparticles are unlike conventional chemicals in that their chemical composition and concentration are not sufficient metrics for a complete description, because they vary in other physical properties such as size, shape, surface properties, crystallinity, and dispersion state.



Nanoparticles differ in their physical properties such as size, shape, and dispersion, which must be measured to fully describe them.

Nanoparticles are characterized for various purposes, including nanotoxicology studies and exposure assessment in workplaces to assess their health and safety hazards, as well as manufacturing process control. There is a wide range of instrumentation to measure these properties, including microscopy and spectroscopy methods as well as particle counters. Metrology standards and reference materials for nanotechnology, while still a new discipline, are available from many organizations.

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NIOSH videos on Commons

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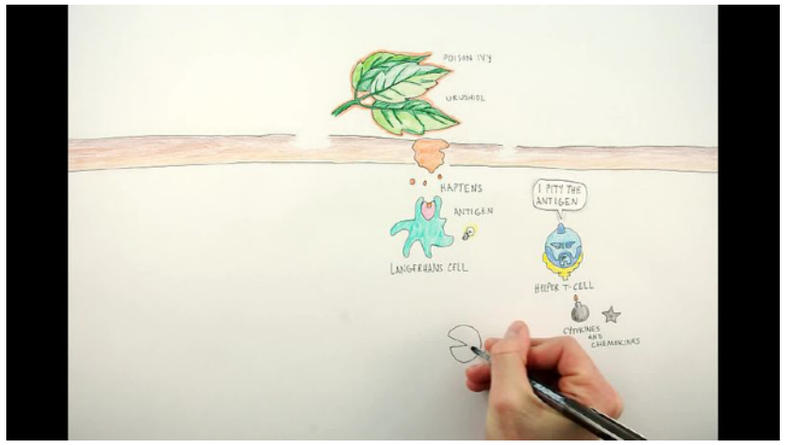
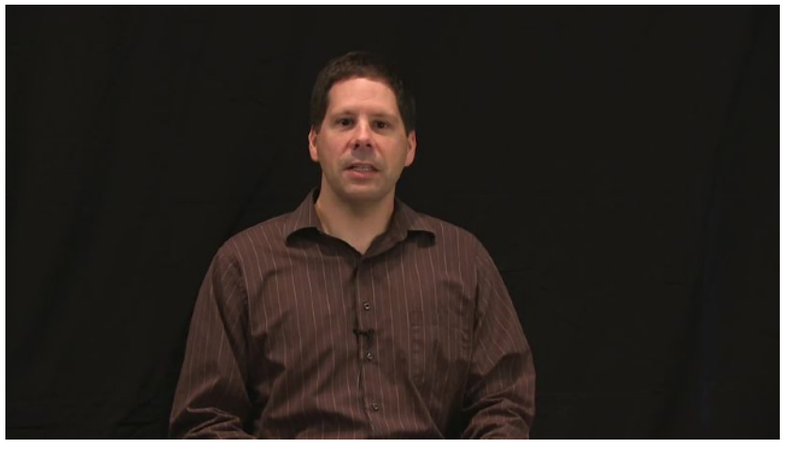
Practical Demonstrations of Ergonomic Principles
23,955 WP / 2,449 YT



How Poison Ivy Works
43,681 WP / 29,778 YT

Arc Flash Awareness
12,306 WP / 2,087 YT



NIOSH Scientists Investigating Pollution From Office Equipment
11,884 WP / 2,258 YT

NIOSH Nano Research - Engineering Controls for Nanomaterial Production and Handling Processes
9,109 WP / 609 YT

Wikidata: Occupational exposure limits

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titanium dioxide nanoparticle (Q41835868)

nanomaterial edit

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Language	Label	Description	Also known as
English	titanium dioxide nanoparticle	nanomaterial	
Spanish	No label defined	No description defined	
Traditional Chinese	No label defined	No description defined	
Chinese	No label defined	No description defined	

All entered languages

Statements

subclass of	nanoparticle 0 references + add reference	edit
	+ add value	
material used	titanium dioxide 0 references + add reference	edit
	+ add value	
time-weighted average exposure limit	0.3 milligram per cubic meter applies to jurisdiction: United States of America duration: 10 hour route of administration: inhalation	edit

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en Titanium dioxide nanoparticle
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Current intelligence bulletin 65: occupational exposure to carbon nanotubes and nanofibers (Q24706832)

publication edit

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Language	Label	Description	Also known as
English	Current intelligence bulletin 65: occupational exposure to carbon nanotubes and nanofibers	publication	
Spanish	No label defined	No description defined	
Traditional Chinese	No label defined	No description defined	
Chinese	No label defined	No description defined	

All entered languages

Statements

instance of	report 1 reference	edit
	scholarly article 0 references	edit + add reference
		+ add value

title	Current intelligence bulletin 65: occupational exposure to carbon nanotubes and nanofibers (English) 1 reference	edit
		+ add value

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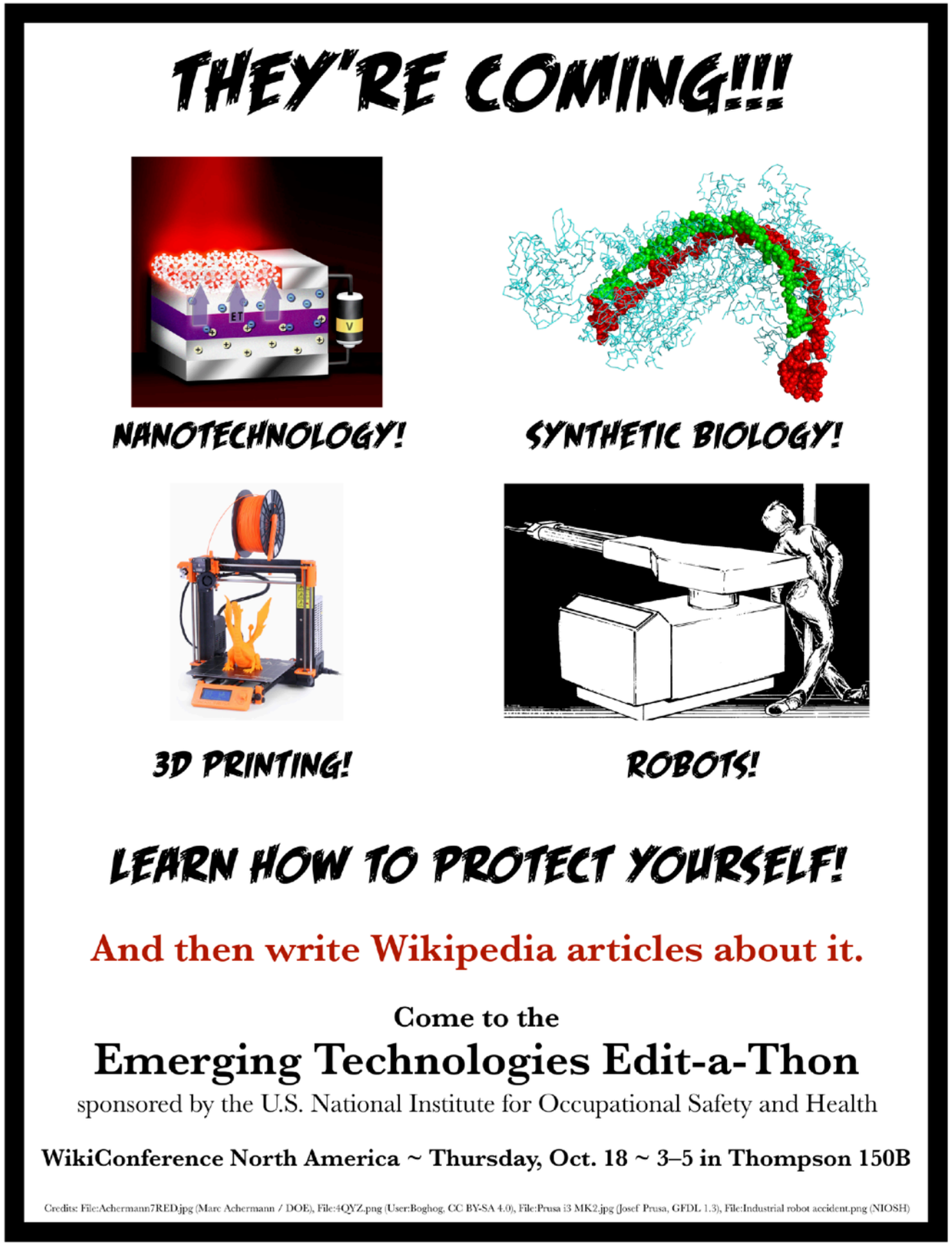

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