

Welcome, [Bai](#)

[NIR Applications](#) ([wiki settings](#) | [settings](#) | [logout](#))

[Front Page](#)[People](#)[NIR Users](#)[Bookmarks](#)[Recent Changes](#)

[Front Page](#)

[Edit](#)

[Info](#)

[Talk](#)

Search:

Welcome to an NIR Applications (new) wiki!

(This is our NIR and XRD wiki's Front Page).

Vibrational and Rotational Spectroscopies

Vibrational- Rotational Spectroscopy, Fluorescence and Chemical-Hyperspectral Imaging

Free Download Notebooks:

 [VRCS.pdf](#)

 [VRCSCARSv2.pdf](#)

DNA Structures and XRD Patterns

 [DNABasics29p.pdf](#)

 [DNADynamics8Mb.pdf](#)

Note: Wiki Limitations

- 1. File size upload limit is 10 Mb.**
- 2. Slow large file size uploads:** be patient until you see the yellow highlighted filename between double brackets.

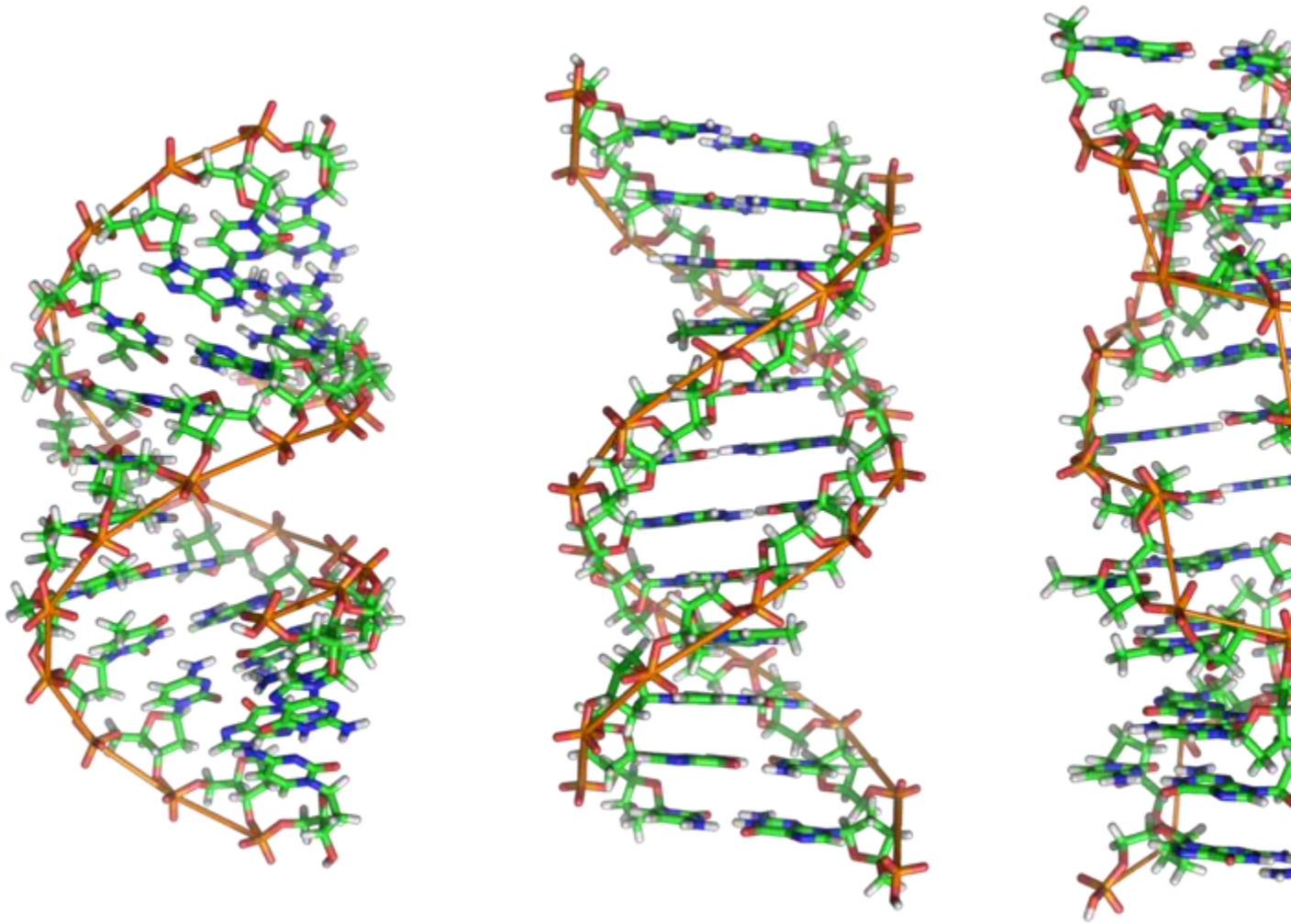
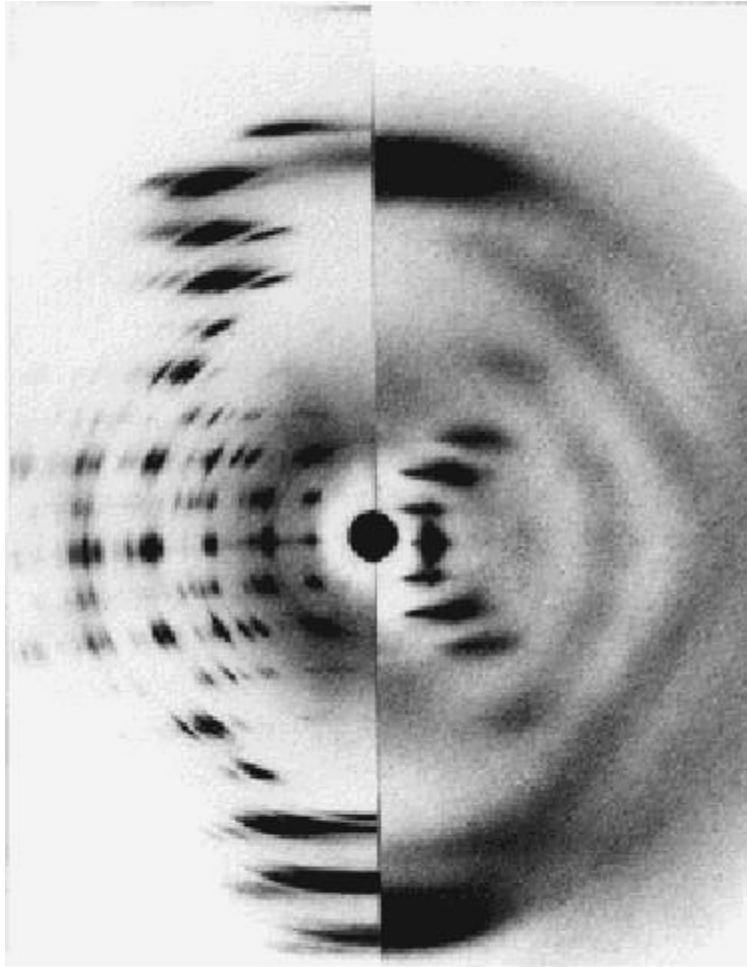


Figure 1. : Three DNA Molecular Configurations: A-DNA, B-DNA (fully hydrated) and Z-DNA



A-DNA B-DNA

Figure 2. Comparison of XRD patterns of A— (left) and B—(right) DNA

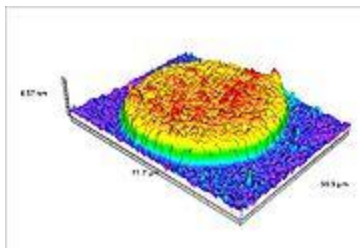
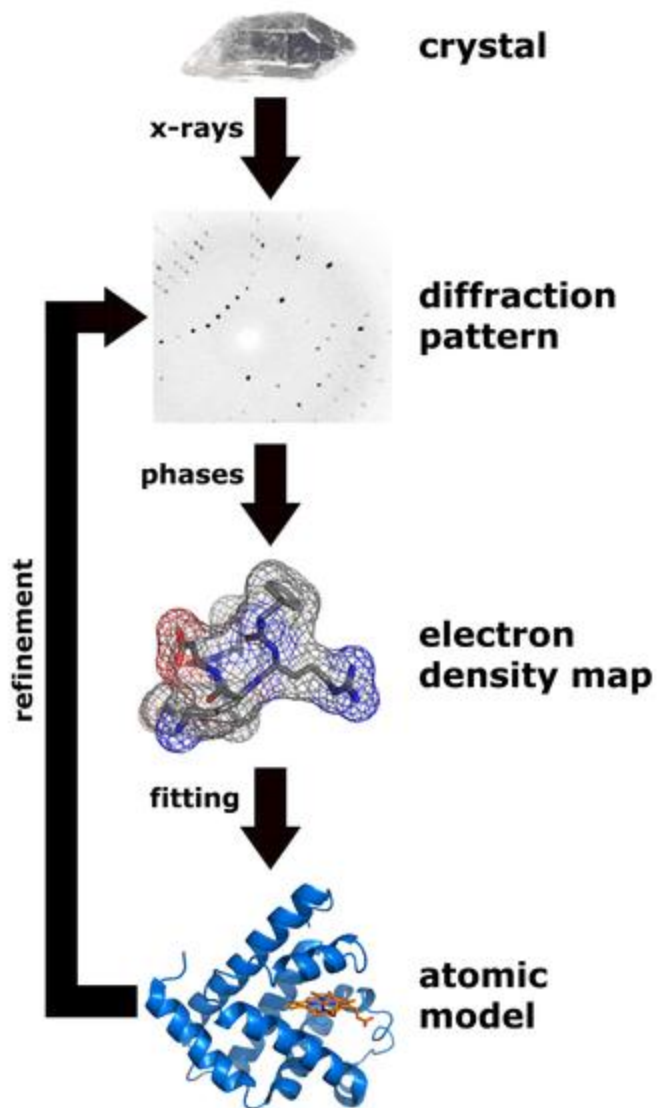


Figure 3: A DNA Biochip. *Can one have DNA nanocomputing?*

XRD Experiment Example



Animated DNA molecular models and hydrogen-bonding

Animated molecular models allow one to visually explore the three-dimensional (3D) structure of DNA. The first DNA model is a space-filling, or [[CPK]], model of the DNA double-helix whereas the third is an animated wire, or skeletal type, molecular model of DNA. The last two DNA molecular models in this series depict ⇨[quadruplex DNA](http://www.phy.cam.ac.uk/research/bss/molbiophysics.php) that may be involved in certain cancers<ref>⇨<http://www.phy.cam.ac.uk/research/bss/molbiophysics.php></ref><ref>⇨<http://planetphysics.org/encyclopedia/TheoreticalBiophysics.html></ref>. The first CPK model in the second row is a molecular model of hydrogen bonds between water molecules in ice that are broadly similar to those found in DNA; the hydrogen bonding dynamics and proton exchange is however very different by many orders of magnitude between the two systems of fully hydrated DNA and water molecules in ice. Thus, the DNA dynamics is complex, involving nanosecond

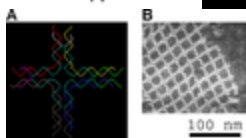
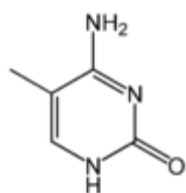
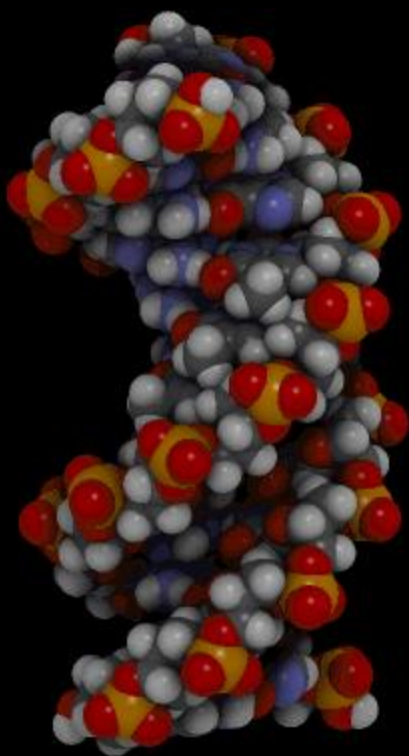
and several tens of picosecond time scales, whereas that of liquid ice is on the picosecond time scale, and that of proton exchange in ice is on the millisecond time scale; the proton exchange rates in DNA and attached proteins may vary from picosecond to nanosecond, minutes or years, depending on the exact locations of the exchanged protons in the large biopolymers. The simple [[harmonic oscillator]] 'vibration' in the third, animated image of the next gallery is only an oversimplified dynamic representation of the longitudinal vibrations of the DNA intertwined helices which were found to be [[anharmonic]] rather than harmonic as often assumed in quantum dynamic simulations of DNA.

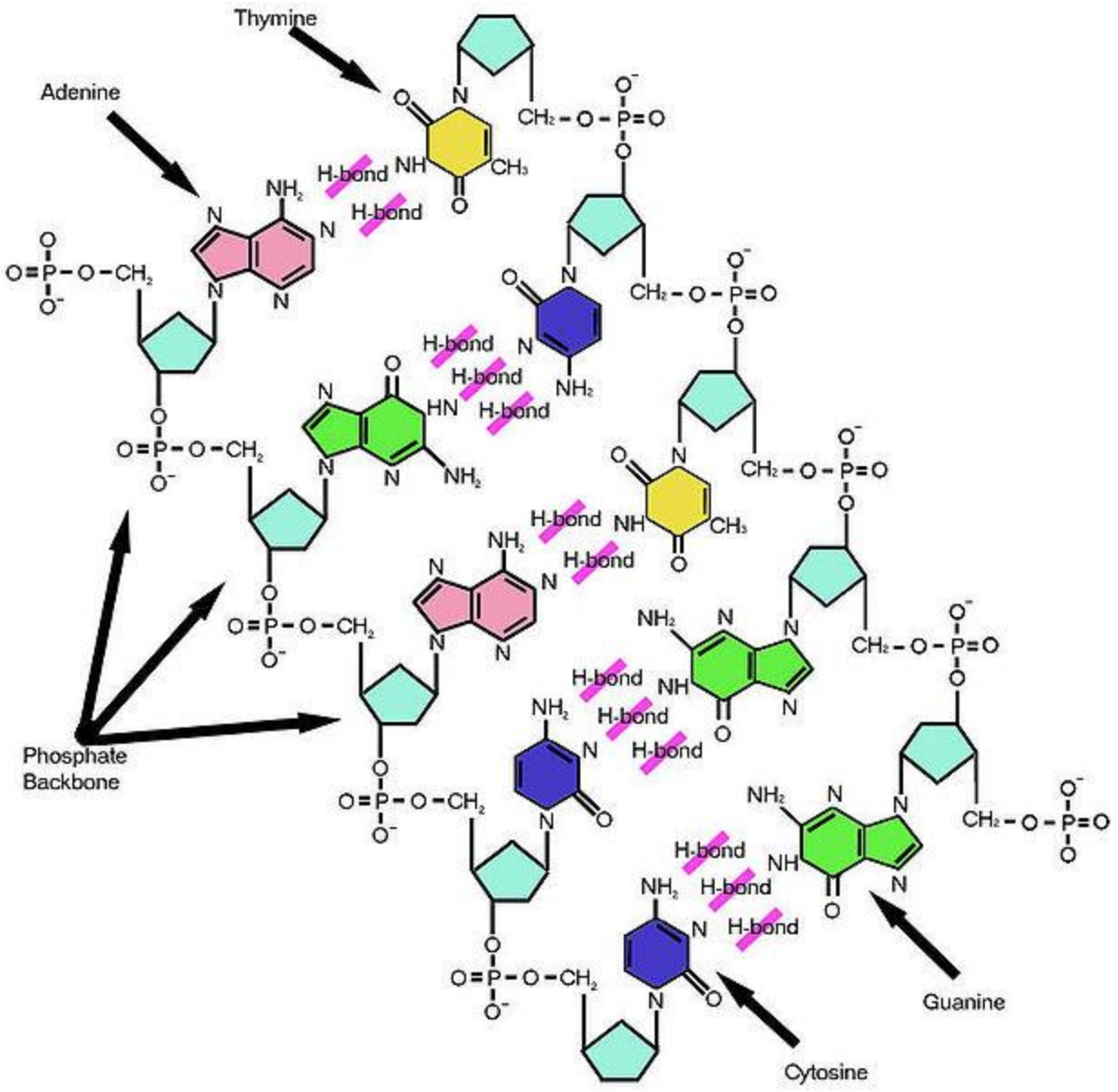
Image Gallery

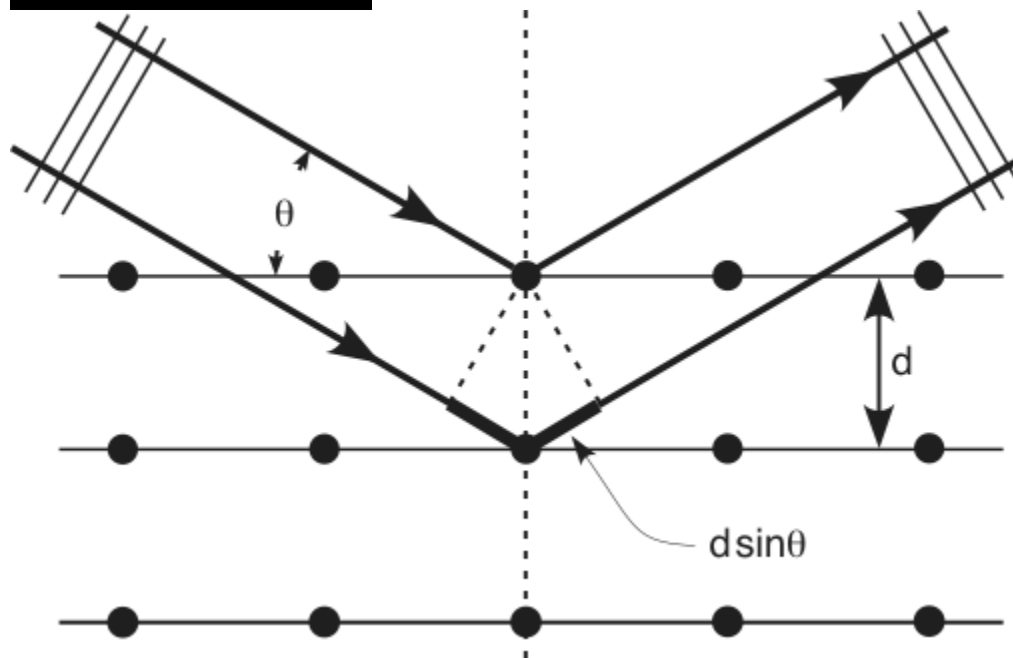
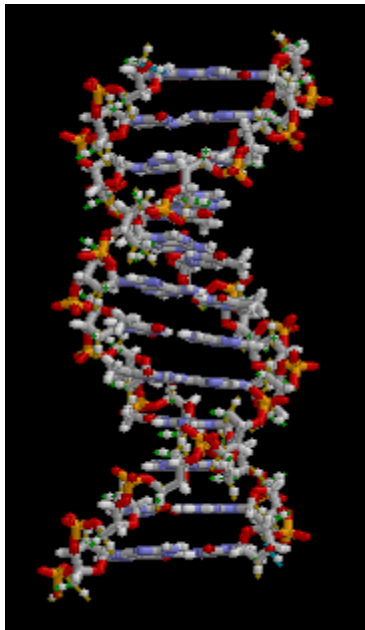
 [GalleriesDNA.docx](#)



 [harmonicoscillator.htm](#)

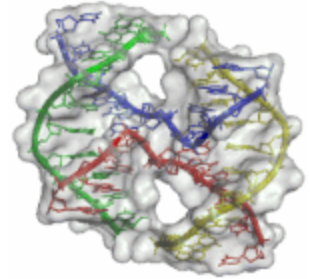
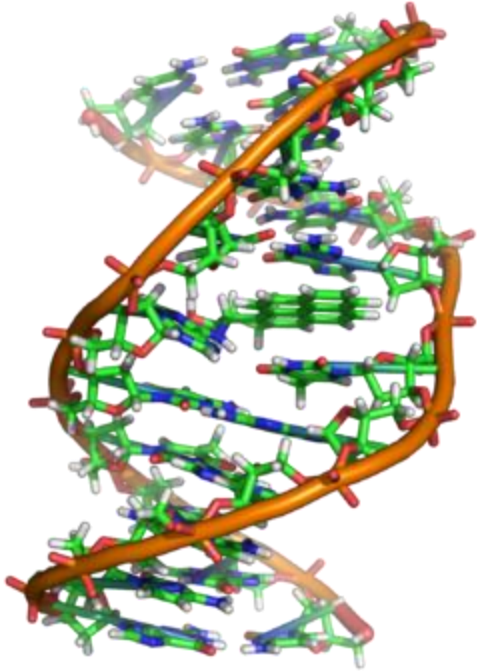
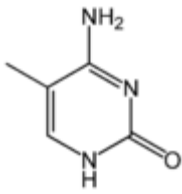
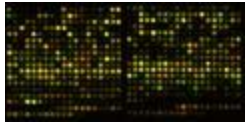


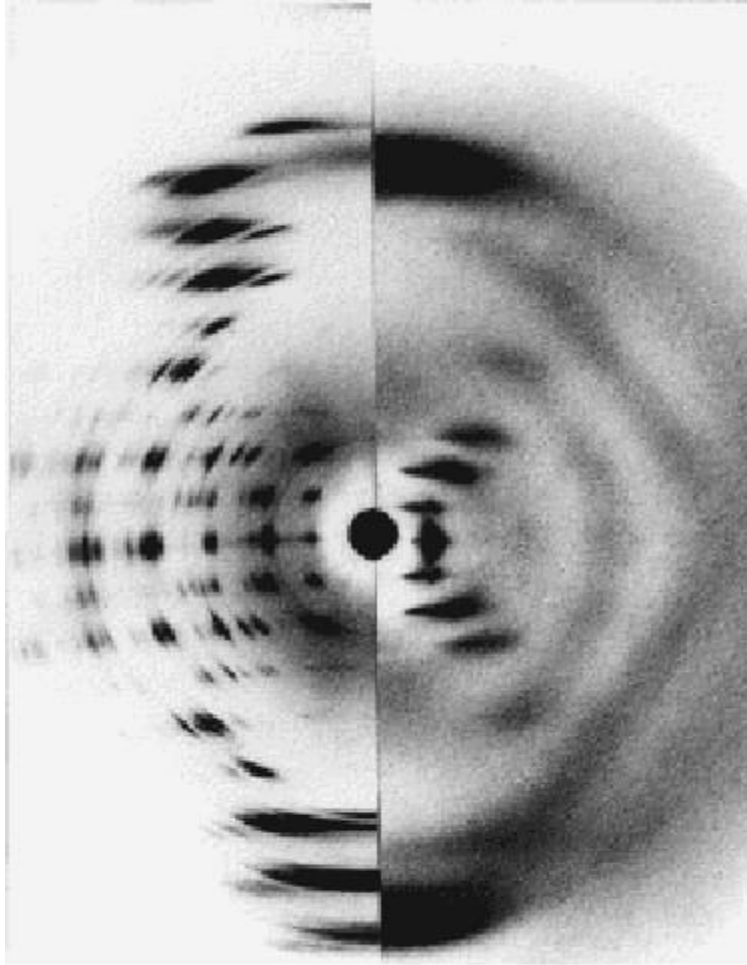




DNAanimated.htm

 [A-](#)

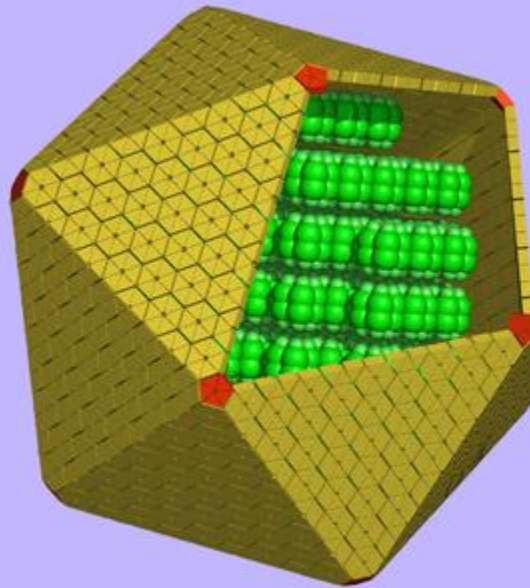
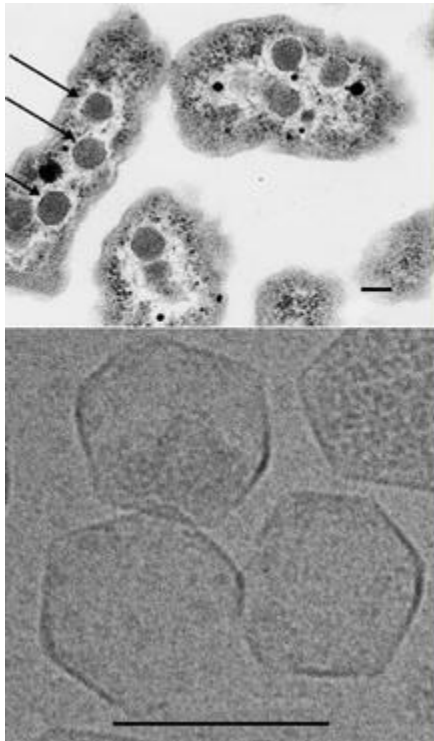
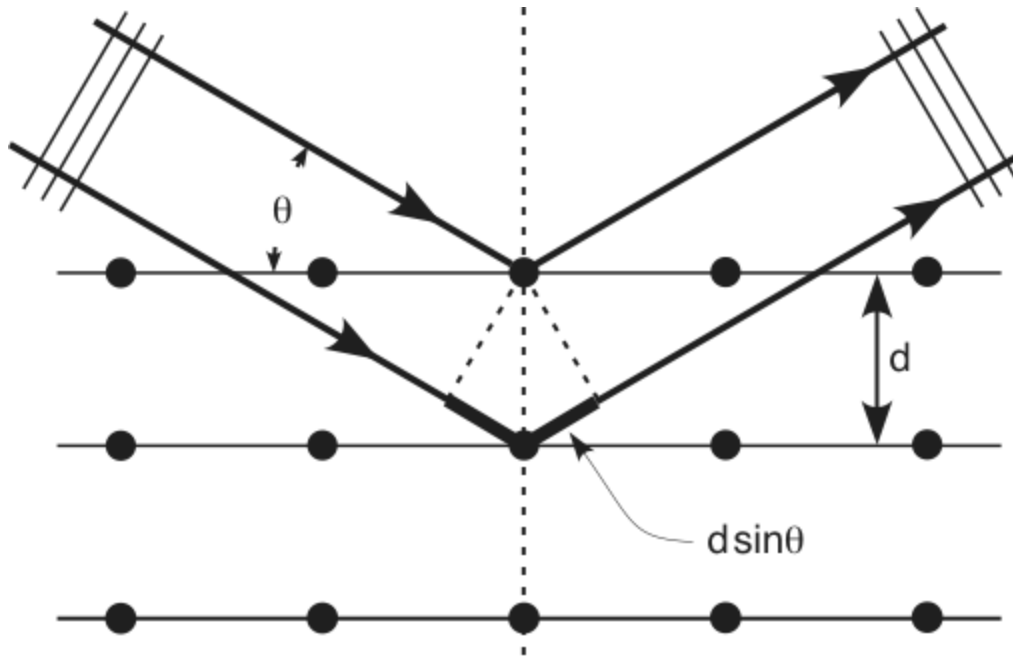




A-DNA B-DNA

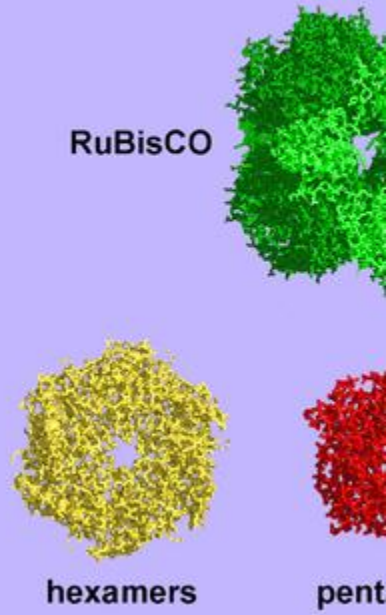
"Genomics_GTLPictorialProgram.jpg"

[Upload new image](#)



The carboxysome

Enzymes and shell p

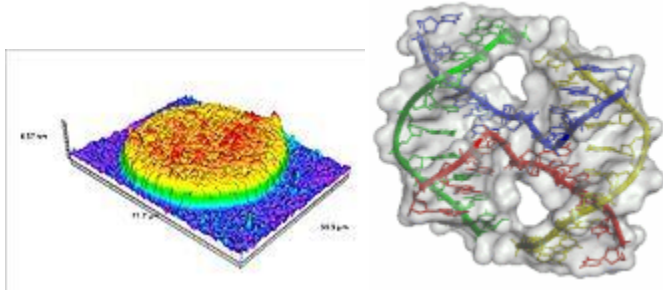


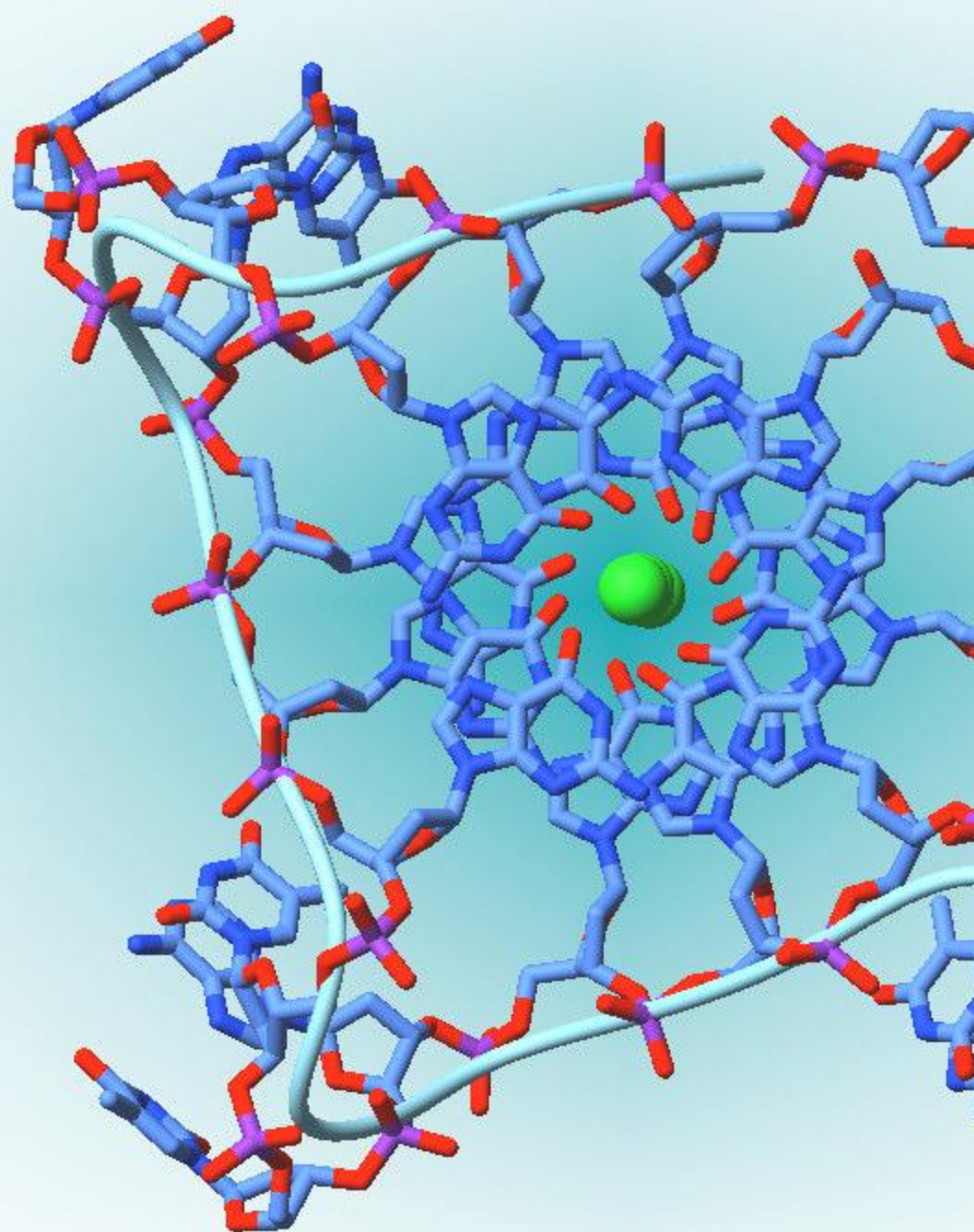
[ABDNAxrd.jpg](#)

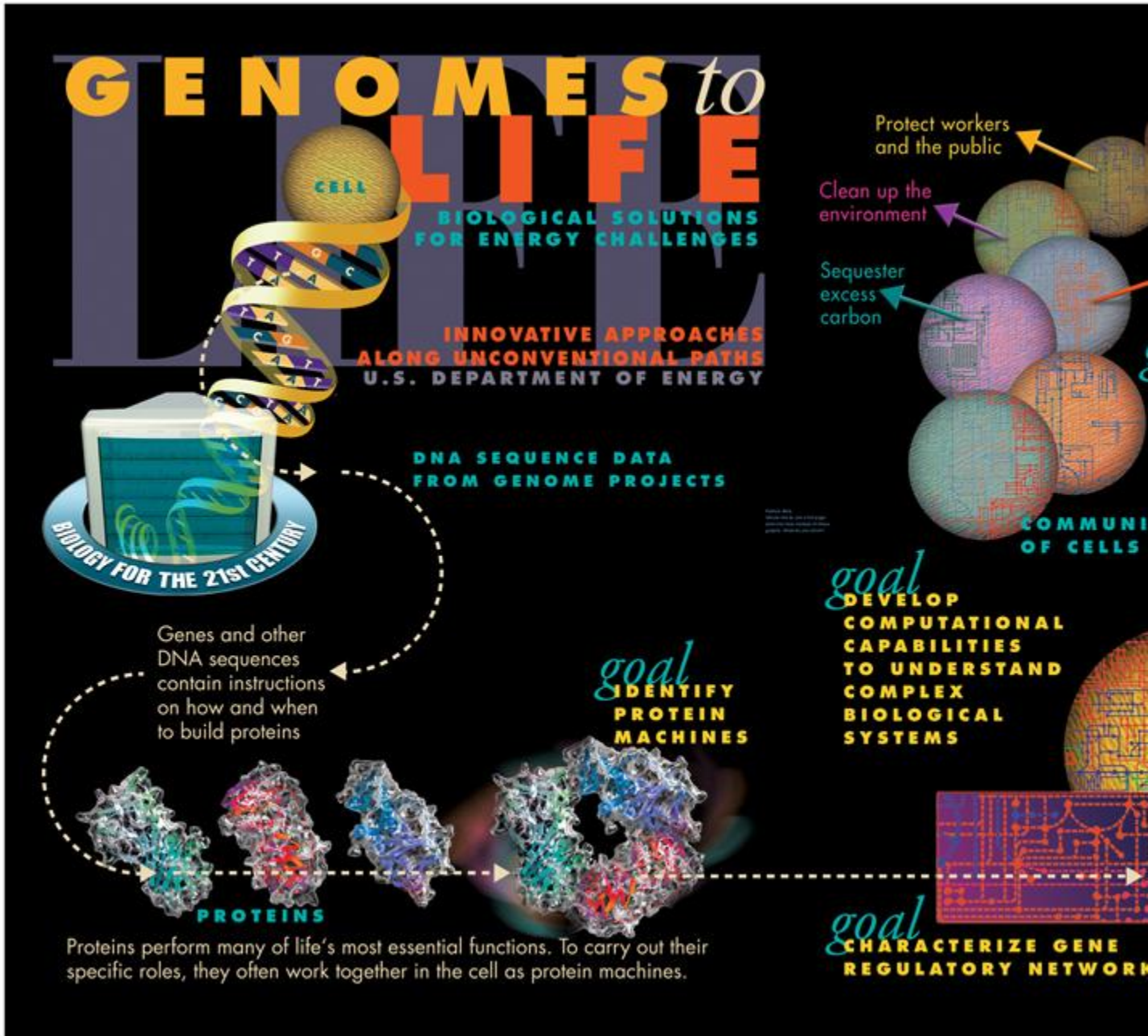
[DividingCell Fluorescence.jpg](#)



Upload new image "Genomics_GTLPIctorialProgram.jpg"







Web Links listing:

NIR Imaging of Single Cancer Cells in Human Breast Tumors

⇒ <http://cdsweb.cern.ch/record/768090/files/SinglecancerCellFTNIRFCSIR.doc>

⇒ <http://cogprints.org/3810/>

Baianu, I C; Korban, S S; Costescu, D; You, T; Lozano, P; Hofmann, N E. 2004a. Fourier Transform Near Infrared Microspectroscopy, Infrared Chemical Imaging, High-Resolution Nuclear Magnetic Resonance and Fluorescence Microspectroscopy Detection of Single Cancer Cells and Single Viral Particles . **CERN Preprint- EXT-2004-069**: Single Cancer Cells from Human tumors are being detected and imaged by Fourier Transform Infrared (FT-IR), Fourier Transform Near Infrared (FT-NIR) Hyperspectral Imaging and Fluorescence Correlation Microspectroscopy.

https://tspace.library.utoronto.ca/bitstream/1807/2950/2/QuantumInteractomicsInCancer_Sept13k4E_cuteprt.pdf

⇒ <http://radiology.rsna.org/content/248/3/925.full.pdf>

⇒ <http://www.encyclopedia.com/doc/1G1-113813479.html>

⇒ http://www.medscape.com/viewarticle/574914_3

PlanetPhysics.org:

⇒ <http://planetphysics.org/>

NIR Analyses of Amino Acid Residues in Proteins

Books

Spectroscopy.:

⇒ <http://planetphysics.org/?op=getobj&from=books&id=277>

Spectroscopy and Applications Book:

⇒ <http://planetphysics.org/?op=getobj&from=books&id=312>

Spectroscopy Principles, Techniques and Applications

⇒ <http://planetphysics.org/?op=getobj&from=books&id=294>

2D-FT NMRI and Spectroscopy

⇒ <http://planetphysics.org/?op=getobj&from=books&id=212>

Articles

"Principles of NIR Spectroscopy" (VIP) :

⇒ <http://planetphysics.org/?op=getobj;from=objects;id=410>

Applications to Biotechnology and Medicine:

⇒ <http://cdsweb.cern.ch/record/768087/files/ApplBiotechnology8NU.doc>

Novel Techniques and Their Wide Applications to Health Foods, Medical and Agricultural Biotechnology in Relation to Policy Making on Genetically Modified Crops and Foods / Baianu, I C ; Prisecaru, V I ; Lozano, P ; Lin, H C. : **Abstract:** Selected applications of novel techniques in Agricultural Biotechnology, Health Food formulations and Medical Biotechnology are being reviewed with the aim of unraveling future developments and policy changes that are likely to open new markets for Biotechnology and prevent the shrinking or closing of existing ones. [...] EXT-2004-066. - 2004. - 38 p.




Near Infrared Microspectroscopy, Fluorescence Microspectroscopy, Infrared Chemical Imaging and High Resolution Nuclear Magnetic Resonance Analysis of Soybean Seeds, Somatic Embryos and Single Cells / Baianu, I C ; Costescu, D ; Hofmann, N E ; Korban, S S ; Lozano, P ; You, T Novel methodologies are currently being developed and established for the chemical analysis of soybean seeds, embryos and single cells by Fourier Transform Infrared (FT-IR), Fourier Transform Near Infrared (FT-NIR) Microspectroscopy, Fluorescence and High-Resolution NMR (HR-NMR). [...] EXT-2004-068. - 2002. - 4 p.

⇒

http://cdsweb.cern.ch/record/768089/files/FCSMicrospectroscopy_SingleVirusFCCSDetection_SingleMoleculeDetection.doc


Startup and Guide Instructions





Quick Start Guide!

1. First read the rest of this page!
2. If you haven't already, read the  [Wiki Creator Guide](#) and  [Wiki Guide](#).
3. Go to [Wiki Settings](#) and change the settings for your wiki!
4. Click the edit button up top of this page and create your new front page.
5. Start adding content to your wiki and read about  [building community](#)
6. Tell your friends, family, acquaintances, enemies, multiple personalities, etc.
7. Celebrate!

Default Pages Included With Any Wiki

This is a simple list of of all pages included with your wiki. You will hopefully create many, many more!

- [All Pages](#) is an automatically generated list of all the pages in your wiki.
- [Bookmarks](#) is for your bookmarks on this wiki. Every user has his/her own bookmarks page based on what they choose to bookmark on this wiki. To bookmark a page, simply click "Bookmark" at the bottom of the page! ( [Interwiki Bookmarks](#) on wikispot shows you all of your bookmarks on all wikis.)
- Front Page is the page you're currently viewing.
- [Events Board](#) is a page where anyone can post events in the community.

- [Help](#) links to the main help pages on wikispot — useful for reference.
- [Interwiki Map](#) — link to non-Wiki Spot wikis using  [interwiki links](#) by adding names and URLs of wikis to this page.
- [Orphaned Pages](#) contains an automatically generated list of pages with no links to them. Ideally, this page should be empty — keep your wiki well-linked!
- [Outgoing Links](#) lists all pages sorted by the number outgoing links on each page. This provides a good place to start if you're feeling  [gnomeish](#) and want to link-up some pages with few to no links.
- [Quick Wiki Tips](#) — At the top of [Recent Changes](#) shows randomly selected tips from this page.
- [Recent Changes](#) shows all the recent activity on the wiki in a given time period. This page lets everybody see what's happening in your wiki! ( [Interwiki Recent Changes](#) on wikispot shows you the recent changes on all the wikis you're watching.)
- [Random Pages](#) is a randomly generated list of twenty-five pages. Good for finding pages to edit once your wiki grows large.
- [Site Organization](#) has links to pages that help you keep your wiki well organized.
- [Templates](#) is a user created list of template pages — pages that you can use as starting blocks for making new pages. [Templates/Business](#) is there just to give you an idea of what a template should be.
- [User Statistics](#) is a page that displays statistics, such as the number of edits, for each person who's edited your wiki.
- [Wanted Pages](#) contains all the pages that are linked to, but do not yet exist. This is another good place to start  [gnomeing](#).
- [Wiki Sandbox](#) is a place for users to play around with the wiki without disturbing your content.
- [Wiki Settings](#) contains the administrative settings for your wiki.
 - [Wiki Settings/CSS](#) is the page where you can upload different style sheets that change your wiki's appearance.
 - [Wiki Settings/General](#) contains general settings for your wiki.
 - [Wiki Settings/Images](#) allows you to customize images on your wiki, such as your logos.
 - [Wiki Settings/Security](#) lets you change the default security settings of your wiki and create user groups to control access.

Making new pages!

To create a new page, simply search for the name of the page you wish to create and then click the "Create a new page with this title" link. Another way to create a new page is by making a link to the page you wish to create from a page that already exists, following the link, and clicking "Create this page." VERY VAGUE and confusing

The user "User VAL" has not edited this wiki.

Bai's Statistics

Edits	Pages Created	Files Contributed	First Edit Date	Last Edit	Last Page Edited
56	0	35	<i>unknown</i>	2009-10-31 07:20:02	Front Page

[Edit](#) this page (last edited 2009-10-31 07:22:01) Except where otherwise noted, this content is licensed under a [Creative Commons Attribution License](#). See [Copyrights](#).



This is a [Wiki Spot](#) wiki. Wiki Spot is a non-profit organization that helps communities collaborate via wikis.