

**FONDAZIONE EL.B.A.**  
**Rapporto Annuale**  
**Attività 2005**

**Consiglio Di Amministrazione, Roma 22-2-2006**

La Fondazione, proseguendo la sua attività, si é dedicata nel 2005 prevalentemente alle ricerche nel settore delle Nanotecnologie e della Proteomica, secondo il Piano Triennale approvato dal Consiglio di Amministrazione.

**STRUTTURA DELLA FONDAZIONE ELBA**

**PRESIDENTE**

Prof. Claudio Nicolini, Ordinario di Biofisica, Università di Genova e Direttore del Nanoworld Institute

**CONSIGLIO DI AMMINISTRAZIONE**

Prof. Claudio Nicolini, Direttore del Nanoworld Institute dell'Università di Genova

Prof. Leonardo Gaspa, Ordinario di Biochimica, Università di Sassari.

Dr. Franco Corsari, Dirigente MIUR Responsabile Amministrativo

Dr. Andrea Di Marsciano, Libero Professionista.

**SECRETARIO SCIENTIFICO:**

Pechkova Eugenia (PhD in Biofisica)

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+ attivo in Italia nell'ambito del FIRB Negoziale in atto

## PERSONALE TECNICO-SCIENTIFICO

Pechkova Eugenia (PhD in Biofisica)  
Riley Jason (PhD in Chimica)  
Stura Enrico (Laurea in Ingegneria Elettronica)  
Pastorino Laura (PhD in Biofisica)  
Sivozhelezov Victor (PhD in Biofisica)  
Bavastrello Valter (PhD in Biofisica)  
Ghisellini Paola (PhD in Biofisica)  
Fiordoro Stefano (Laurea in Biologia)  
Malfatti Luca (Laurea in Fisica)  
Ragusa Santa (Laurea in Biologia)  
Saradindu Das (Laurea in Ingegneria)  
Scanu Roberta (Laurea in Chimica)  
Shailesh Kumar Tripathi (Laurea in Informatica)  
Spera Rosanna (Laurea in Fisica)

## PERSONALE AMMINISTRATIVO

Rag. Lioni Manila – Segretario Amministrativo

## PERSONALE GESTIONALE E DEI FORUM FORMATIVI

Dr. Occhialini Paolo (Laurea in Medicina)  
Dr. Camboni Valentina (Laurea in Economia e Commercio)

## ENTRATE PROGETTI

PROGETTI	2004		2005		2006
	PREVENTIVO	CONSUNTIVO	PREVENTIVO	CONSUNTIVO	PREVENTIVO
INTAS-UR		<b>4.981,00</b>	7.000,00	<b>0,00</b>	
FISR DISP.QUANTICI	82.317,00	<b>69.024,00</b>		<b>0,00</b>	147.764,00
FISR MODELLISTICA				<b>0,00</b>	6.520,00
FIRB NEGOZIALE	192.062,00	<b>104.896,00</b>	149.606,00	<b>149.606,00</b>	269.562,00
MIUR-FUNZIONAMENTO	100.000,00	<b>100.000,00</b>	80.000,00	<b>80.000,00</b>	70.000,00
FKL-LED NANOCATILISI	11.400,00	<b>11.400,00</b>		<b>0,00</b>	
TEC.BIO PNR BTA 6			78.088,00	<b>78.088,00</b>	143.461,39
TATTILE COMMESSA					84.607,93
INBB COMMESSA	14.000,00	<b>14.000,00</b>			
<b>TOTALE</b>	<b>399.779,00</b>	<b>304.301,00</b>	<b>314.694,00</b>	<b>307.694,00</b>	<b>721.915,32</b>

## Lista delle pubblicazioni

1/1/2005-28/12/2005

(sottolineato il nome dei ricercatori della Fondazione)

1. Carrara S.; Riley D.J.; Bavastrello V.; Stura, E.; Nicolini, C. *Methods to fabricate nanocontacts for electrical addressing of single molecules* **Sensors and Actuators B** **105**, 542-548, 2005. (IF=2,083).
2. Sivozhelezov V., Nicolini C., *Homology Modeling of Cytochrome P450<sub>scc</sub> and of its Mutation for Optimal Amperometric Sensor*, **J Theoretical Biology** **234**, 479-485, 2005 (IF=1,683).
3. Erokhin V., Carrara S., Paternolli C., Valkova L., Bernstorff S., Nicolini C., *X-ray study of structural reorganization in phthalocyanine containing Langmuir–Blodgett heterostructures*, **Applied Surface Science** **245**, 369-375, 2005 (IF=1,497)
4. Riley J., Bavastrello V., Covani U., Nicolini C. *An In-Vitro Study of the Sterilisation of Titanium Dental Implants Using UV-Radiation*, **Dental Materials** **21**, 756-760, 2005. (IF=2.057)
5. Ghisellini P., Paternolli C., Nicolini C., *Site-directed mutations (Asp405Ile and Glu124Ile) in cytochrome P450<sub>scc</sub>: effect on adrenodoxin binding*, **J. Cell Biochem** **95**, 720-730, 2005. (IF=2,946)
6. Pechkova E., Fontani D., Riekle C., Roth S., Nicolini C.,  *$\mu$ Gisaxs and protein nanotemplate crystallization: I. methods and instrumentation*, **J. Synchrotron Radiation** **12**, 713-716, 2005 (IF=1,919)
7. Pechkova E., Sivozhelezov V., Tropiano G., Fiordoro S., Nicolini C., *Comparison Of Lysozyme Structures Derived From Thin Film-Based And Classical Crystals*, **Acta Crystallographica Section D** **D61**, 803-808, 2005 (IF=1,693)
8. Pechkova E., Fiordoro S., Fontani D., Nicolini C., *Investigating crystal growth mechanisms with and without lb template: protein transfer from lb to crystal*, **Acta Crystallographica Section D** **D61**, 809-812, 2005 (IF=1,693)
9. Shumantzeva V., Carrara S., Bavastrello V., Riley JD., Bulko TV., Skryabin K., Archakov AI, Nicolini C, *Direct electron transfer between cytochrome P450<sub>scc</sub> and screenprinted rhodium electrode modified with gold nanoparticles*, **Biosensors & Bioelectronics** **21**, 217-222, 2005.(IF=3,251)
10. Ding H., Zhang X., Ram M.K., Nicolini C., *Ultrathin films of tetrasulfonated copper phthalocyanine-capped titanium dioxide nanoparticles: fabrication, characterization, and photovoltaic effect*, **J Colloid Interface Science** **290**, 166-171, 2005. (IF=1,784)
11. Narizzano R., Erokhin V., Nicolini C., *A heterostructure composed of conjugated polymer and copper sulfide nanoparticles*, **J Physical Chemistry B** **109**, 15798-15802, 2005 (IF=3,834)
12. Pechkova E., Vasile F., Spera R., Fiordoro S., Nicolini C., *Protein Nanocrystallography: Growth Mechanism and Atomic Structure of Crystal Induced by Nanotemplates*, **Journal of Synchrotron Radiation** **12**, 772-778, 2005 (IF=1,919)
13. Carrara S., Bavastrello V., Ricci D., Stura E., Nicolini C., *Improved nanocomposite materials for biosensor applications investigated by electrochemical impedance spectroscopy*, **Sensors and Actuators B**, **109**, 221-226, 2005. (IF=2,083)
14. Nicolini C. Pechkova E., *Structure and growth of ultrasmall protein microcrystals by synchrotron radiation. I.  $\mu$ GISAXS and  $\mu$ diffraction of P450<sub>scc</sub>*, **Journal of Cellular Biochemistry** **in press**. (IF=2,946)
15. Pechkova E., Nicolini C., *Structure and growth of ultrasmall protein microcrystals by synchrotron radiation: II. Nucleation of P450<sub>scc</sub> versus lysozyme by  $\mu$ gisaxs*, **Journal of Cellular Biochemistry** **in press**. (IF=2,946).

16. Nicolini C. Fiordoro S., Stura E., Spera R., Giacomelli L., *Gene expression in the cell cycle of human t lymphocytes. II. Experimental determination by dnaser technology*, **Journal of Cell biochemistry**, in press 2005. (IF=2,946).
17. Sivozhelezov V., Giacomelli L., Tripathi S., Nicolini C. *Gene expression in the cell cycle of human t lymphocytes: I. Predicted gene and protein networks* **Journal of Cell Biochemistry**, in press 2005. (IF=2,946).
18. Sivozhelezov V., Nicolini C., *Theoretical framework for octopus rhodopsin crystallization and utilization in optical computation*, **J Theoretical Biology** in press 2005. (IF=1,683) (IB=1,683).
19. Stura E., Nicolini C., New nanomaterials for light Weight lithium batteries, **Analytica Chimica Acta** in press 2005. (IF=2,588)
20. Sivozhelezov V., Pechkova E., Nicolini C., *Mapping Electrostatic Potential of A Protein on its Hydrophobic Surface: Implications for Crystallization of Cytochrome P450sc*, **Journal of Theoretical Biology** in press 2005. (IF=1,683)
21. Nicolini C. Pechkova E., *Nanostructured Biomaterials and Biocrystals*, **Journal of Nanosciences and Nanotechnology** in press. (IF=2,0)
22. Grasso V., Lambertini, Ghisellini P., Valerio F., Stura E., Perlo P., Nicolini C., *Nanopatterning of APA matrix for biomolecular microarray*, **Nanotechnology**, 2005 in press (IF=3,32) (IB=1,42)
23. Sivozhelezov V., Pechkova E., Nicolini C., *Prospects For Octopus Rhodopsin Utilization In Optical And Quantum Computation*, **Physics of Particles and Nuclei** in press 2005 (IF=0,33)
24. Scanu R., Spano N., Panzanelli A., Pilo M.I. Piu P.C. Sanna G., Tapparo A., *Direct chromatographic methods for the rapid determination of homogentisic acid in strawberry tree (Arbutus unedo L.) honey*, **Journal-of-Chromatography-A**. 1090, 76-80, 2005.
25. Innocenzi P., Malfatti L., Kidchob T., Falcaro P., Costacurta S., Guglielmi M., Mattei G., Bello V., Amenitsch H., *Thermal-induced phase transitions in self-assembled mesostructured films studied by small-angle X-ray scattering*, **Journal-Of-Synchrotron-Radiation**. 12, 734-738, 2005
26. Buso D., Falcaro P., Costacurta S., Guglielmi M., Martucci A., Innocenzi P., Malfatti L., Bello V., Mattei G., Sada C., Amenitsch H., Gerdova I., Hache A., *PbS-doped mesostructured silica films with high optical nonlinearity*, **CHEMISTRY-OF-MATERIALS** 17, 4965-4970 2005
27. Innocenzi P., Malfatti L., Kidchob T., Falcaro P., Guidi M.C., Piccinini M., Marcelli A., *Kinetics of polycondensation reactions during self-assembly of mesostructured films studied by in situ infrared spectroscopy*, **CHEMICAL-COMMUNICATIONS**. 18, 2384-2386, 2005.
28. Falcaro P., Costacurta S., Mattei G., Amenitsch H., Marcelli A., Guidi M.C., Piccinini M., Nucara A., Malfatti L., Kidchob T., *Innocenzi P.*, *Highly ordered "defect-free" self-assembled hybrid films with a tetragonal mesostructure*, **JOURNAL-OF-THE-AMERICAN-CHEMICAL-SOCIETY** 127, 3838-3846, 2005.
29. Malfatti L., Falcaro P., Amenitsch H., Caramori S., Argazzi R., Bignozzi C.A., Maggini S.E.M., Innocenzi P., *Mesostructured Self-Assembled Titania Films for Photovoltaic Applications*, **Microporous and Mesoporous Materials** 88, 304-311, 2005.

### **LIBRI Internazionali**

Pechkova E., Nicolini C., *Guest Editors of “Nanobiotechnology and Synchrotron Radiation”, Special Issue of Journal of Synchrotron Radiation, 12, 2005*

### **Monografie internazionali**

Nicolini C., Narizzano R., Bavastrello V., New materials by organic nanotechnology and their applications, *Recent Research Developments In Material Science 2005*

### **Proceedings**

Nicolini C., Pechkova E., Grasso V., Valerio F., Perlo P., Nanopatterning of Anodic Porous Alumina Matrix for Dna Chip and Protein Nanocrystallography, Nanotechnology Congress in press 2005.

#### **Strutture 3D di Proteine Depositare (<http://www.rcsb.org>)**

1. 2AUB: Lysozyme Structure Derived From Thin-Film-Based Crystals, Pechkova, E., Sivozhelezov, V., Tropiano, G., Fiordoro, S., Nicolini, C
2. 2ASA: Homology Modeling Of Cytochrome P450scc, Sivozhelezov, V., Nicolini C.
3. 2AUL: Theoretical Model Of Octopus Rhodopsin