



شبكة المعلومات الجامعية

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شبكة المعلومات الجامعية  
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# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم





شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
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# بالرسالة صفحات لم ترد بالاصل



**Resistance of CD1 Mice to *Schistosoma mansoni*  
Infection Using *Fasciola gigantica*  
Fatty Acid Binding Protein**

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A Thesis

Submitted to the Faculty of Science, Cairo University

In Partial Fulfillment for the Degree of M.Sc.

In Immunology and Parasitology

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BY

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*Fasciola gigantica* Fatty Acid Binding Protein.

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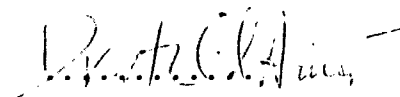
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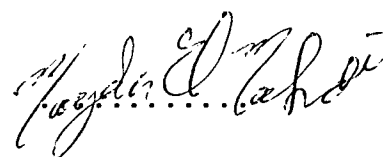
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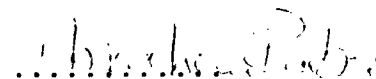
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*To my Father and Mother  
Heartfelt Thanks*

*Just wanted you to  
have a sign  
of my appreciation*



## Abstract

Schistosomes are blood-dwelling flukes that infect 200 million people worldwide and are responsible for hundreds of thousands of deaths annually. Although schistosomicidal drugs and other control measures exist, the advent of an efficacious vaccine remains the most potentially powerful means for controlling this disease. In this study, native FABP from *F. gigantica* was purified from the adult worm's crude extract by saturation with ammonium sulphate followed by separation on DEAE- sephadex A-50 anion exchange chromatography and gel filtration using sephacryl HR-100, respectively. CD1 mice were immunized with the purified, native *F. gigantica* fatty acid binding protein in Freund's adjuvant and challenged subcutaneously with 120 *Schistosoma mansoni* cercariae. Immunization of CD1 mice with *F. gigantica* FABP has induced heterologous protection against *S. mansoni*. This protection evident as significant reduction in mean worm burden (72.3%), liver and intestinal egg count (81.3%% and 80.8%, respectively) and hepatic granuloma counts (42%). Also, it elicited mixed IgG1/IgG2b immune responses with IgG1 isotype predominating. This suggests that native *F. gigantica* FABP is mediated by a mixed Th1/Th2 response. In contrast, it failed to induce any significant differences in the mean total number of *S. mansoni* egg stages or in the mean granuloma diameter. This indicated that native *F. gigantica* FABP considered as a promising vaccine candidate against *S. mansoni*.

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## List of Abbreviation

<b>ADCC</b>	Antibody dependent cell mediated cytotoxicity
<b>AKP</b>	Alkaline phosphatase
<b>BCG</b>	Bacillus Calmette-Guérin
<b>bp</b>	Base pair
<b>BPB</b>	Bromo phenol blue
<b>BSA</b>	Bovine serum albumin
<b>DEAE</b>	Diethylaminoethyl
<b>cDNA</b>	Complementary deoxy ribonucleic acid
<b>CFA</b>	Complete Freund's adjuvant
<b>dist. H<sub>2</sub>O</b>	Distilled water
<b><i>E. liei</i></b>	<i>Echinostoma liei</i>
<b>ELISA</b>	Enzyme linked immunosorbent assay
<b>EPG</b>	Egg/gram
<b>E/S</b>	Excretory secretory molecules
<b><i>F. gigantica</i></b>	<i>Fasciola gigantica</i>
<b>FABP</b>	Fatty acid binding protein
<b>Fh12</b>	Native <i>Fasciola hepatica</i> 12 kDa fatty acid binding protein
<b>γ</b>	Gamma
<b>G3PDH</b>	Glyceraldehyde-3-phosphate dehydrogenase
<b>GST</b>	Glutathiones-s-transferase
<b>hr</b>	Hour



<b>HIV</b>	Human immune deficiency virus
<b>HPV</b>	Human papilloma virus
<b>IFA</b>	Incomplete Freund's adjuvant
<b>IFN-<math>\gamma</math></b>	Interferon gamma.
<b>Ig</b>	Immunoglobulin
<b>IL</b>	Interluken
<b>i.p.</b>	Intraperitoneally
<b>IrV-5</b>	Irradiated vaccine antigen number five
<b>mAb</b>	Monoclonal antibody
<b>MAP</b>	Multiple antigen peptide
<b>MGD</b>	Mean granuloma diameter
<b>Na<sub>2</sub> HPO<sub>4</sub></b>	Monobasic sodium phosphate
<b>Na<sub>2</sub>CO<sub>3</sub></b>	Sodium carbonate
<b>NaCl</b>	Sodium chloride
<b>NaH<sub>2</sub> PO<sub>4</sub></b>	Dibasic sodium phosphate
<b>NaHCO<sub>3</sub></b>	Sodium bicarbonate
<b>OD</b>	Optical denisty
<b>PBMC</b>	Periphral blood mononuclear cell
<b>PBS</b>	Phosphate buffered saline
<b>PBS-T</b>	PBS-Tween
<b>PI</b>	Post-infection
<b>PMSF</b>	Phenylmethysulfonyl fluoride
<b>pNPP</b>	P-nitrophenyl phosphate

<b>PZQ</b>	Praziquantel
<b>P42</b>	42 band protein antigen
<b>RA</b>	Radiation attenuated
<b>rFh15</b>	15kDa recombinant <i>Fasciola hepatica</i> fatty acid binding protein
<b>rIrV-5</b>	recombinant Irradiated vaccine antigen number five
<b>rSjGST</b>	Recombinant <i>Schistosoma japonicum</i> 26 kDa GST
<b>Sb14-3-3</b>	<i>Schistosoma bovis</i> 14-3-3 protein
<b>SbGST</b>	<i>Schistosoma bovis</i> glutathione S-transferase
<b>SBSP/TBRI</b>	Schistosome Biological Material Supply program, Theodor Bilharz Research Institute.
<b>s.c.</b>	Subcutaneously
<b>SD</b>	Standard deviation
<b>sdLN</b>	Skin draining lymph nodes
<b>SDS-PAGE</b>	Sodium Dodecyl Sulphate –Polyacrylamide gel Electrophoresis
<b>Sh28GST</b>	<i>Schistosoma haematobium</i> glutathione S-transferase
<b>Sj23</b>	<i>Schistosoma japonicum</i> -23 kDa membrane antigen
<b>Sj26 DNA</b>	<i>Schistosoma japonicum</i> glutathione S-transferase DNA
<b>SjGST</b>	<i>Schistosoma japonicum</i> glutathione S-transferase
<b>Sm14</b>	<i>Schistosoma mansoni</i> 14 kDa fatty acid binding protein
<b>Sm23</b>	<i>Schistosoma mansoni</i> -23 kDa membrane antigen

<b>SmGST</b>	<i>Schistosoma mansoni</i> glutathione S-transferase
<b>Sm 37</b>	<i>Schistosoma mansoni</i> Glyceraldehyde-3-phosphate dehydrogenase
<b>Sm 37-OVA</b>	<i>Schistosoma mansoni</i> 37- G3PDH coupled to ovalbumin
<b>Sm37-5</b>	Major B cell epitope of Sm37-GAPDH
<b>TEMED</b>	Tetramethylenediamine
<b>Th</b>	T-helper cell
<b>TNF-<math>\alpha</math></b>	Tumor necrosis factor alpha.
<b>TPI</b>	Triose phosphate isomerase
<b>TSP</b>	Tetraspanin
<b>UV</b>	Ultra violet
<b>wk</b>	Week(s)
<b>WHO</b>	World Health Organization.



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