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MALARIA ERADICATION THROUGH VACCINATION – 9610 MEDICAL CENTER DR SUITE 200 – ROCKVILLE MD 20850 – 301-770-3222 – sales@sanaria.com - sanaria.com

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Product Catalog 2026

About Sanaria

Sanaria has developed whole-sporozoite malaria vaccines and human monoclonal antibodies that confer high-level, long-lasting protection against malaria caused by Plasmodium falciparum. During the development of these vaccines in a highly regulated, cGMP-compliant industrial setting, Sanaria has gained the ability to produce purified malaria parasites, infected mosquitoes, and monoclonal antibodies. Sanaria has also developed specialized malaria assays and tools for malaria research and clinical development.

To advance and promote high-quality research toward new vaccines, biologics, drugs, and diagnostics, Sanaria is making these products and services available to the broader research community through the Sanaria **Family of Products and Services**.

Product Offerings

For Controlled Human Malaria Infections:

| PRODUCT TYPE | PAGES |
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| CHMI Sporozoites | 4 |

For Research:

| PRODUCT TYPE | PAGES |
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Note: Sanaria includes an initial expert consultation for all orders over \$5,000 to enable customers to maximize the benefits of Sanaria's products in their research projects. It is recommended that customers discuss research goals with Sanaria before placing an order.

Custom Product Requests: Please inquire, we have the capability to customize our products to meet customers' specific needs.

Service Offerings

| SERVICE TYPE | PAGES |
|-----------------|-------|
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Volume discounts are available. Please inquire for more details.

For All Sales inquiries, please email sanaria@sanaria.com or call +1(301)770-3222. If you have an urgent request, please contact Jeremy Guth at jguth@sanaria.com.

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Product Offerings

For Controlled Human Malaria Infections (CHMI)

CHMI Mosquitoes

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>PRODUCT DESCRIPTION</u> | | | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|---|-----------------------|----------------------------|---------------|--|---|--|
| | | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>DESCRIPTION</u> | | |
| Sanaria Aseptic Challenge Mosquitoes (NF54) | SAN-115 | Aseptic | NF54 | Aseptic PfSPZ-infected mosquitoes used for CHMIs to assess malaria vaccines, drugs, monoclonal antibodies, and innate and adaptive immunity | *Adequate number of aseptic PfSPZ-infected mosquitoes to conduct CHMI in up to 25 volunteers over a maximum of 2 days | Please inquire with our sales department about pricing |
| Sanaria Aseptic Challenge Mosquitoes (7G8) | SAN -116 | Aseptic | 7G8 | | | |
| Sanaria Aseptic Challenge Mosquitoes (NF135.C10) | SAN -117 | Aseptic | NF135.C10 | | | |
| Sanaria Aseptic Challenge Mosquitoes (Other Custom) | SAN -122 | Aseptic | Custom | | | |
| Sanaria Non-Aseptic Challenge Mosquitoes (NF54) | SAN-123 | Non-Aseptic | NF54 | Non-aseptic, PfSPZ-infected mosquitoes used for CHMIs to assess malaria vaccines, drugs, monoclonal antibodies, and innate and adaptive immunity | *Adequate number of non-aseptic PfSPZ-infected mosquitoes to conduct CHMI in up to 25 volunteers over a maximum of 2 days | Please inquire with our sales department about pricing |
| Sanaria Non-Aseptic Challenge Mosquitoes (7G8) | SAN -124 | Non-Aseptic | 7G8 | | | |
| Sanaria Non-Aseptic Challenge Mosquitoes (NF135.C10) | SAN -125 | Non-Aseptic | NF135.C10 | | | |
| Sanaria Non-Aseptic Challenge Mosquitoes (Other/Custom) | SAN -126 | Non-Aseptic | Custom | | | |
| Sanaria Non-Infected, Non-Aseptic Mosquitoes for CHMI | SAN-120 | Non-Aseptic | None | Non-aseptic, non-infected mosquitoes for controls in CHMIs | *Adequate number of non-aseptic, non-infected mosquitoes to conduct CHMI in up to 25 volunteers over a maximum of 2 days | Please inquire with our sales department about pricing |

*minimum order

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CHMI Sporozoites

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>SPZ STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|---------------------------------|-----------------------|-------------------|-------------------|---|--|--|
| Sanaria® PfSPZ Challenge (NF54) | SAN-200 | Aseptic | NF54 | Aseptic, purified, vialled, cryopreserved, fully infectious PfSPZ used for CHMIs to assess malaria vaccines, drugs, monoclonal antibodies, and innate and adaptive immunity | *Adequate amount of PfSPZ challenge for CHMI of up to 25 volunteers. | Please inquire with our sales department about pricing |
| Sanaria® PfSPZ Challenge (7G8) | SAN-202 | | 7G8 | | | |

**minimum order*

Product Offerings For Research

Mosquitoes (not for human use)

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>PF STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|--|-----------------------|-------------------|------------------|---|-------------------------|--|
| Sanaria® PfSPZ-Infected, Non-Aseptic Mosquitoes for Research | SAN-118 | Non-Aseptic | NF54 | Non-aseptic, PfSPZ-infected mosquitoes for research | 400 female mosquitoes | Please inquire with our sales department about pricing |
| Sanaria® Non-Infected, Non-Aseptic Mosquitoes for Research | SAN-119 | | None | Non-aseptic, non-infected mosquitoes for research | 400 female mosquitoes | |
| Sanaria® Non-Infected, Blood-Fed Mosquitoes for Research | SAN-121 | | None | Non-aseptic, non-infected, blood-fed mosquitoes | 400 female mosquitoes | |

Plasmodium falciparum Sporozoites (not for human use)

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|---------------------------|-----------------------|-------------------|---|---|--|--|
| Infectious Sanaria® PfSPZ | SAN-300 | Aseptic | NF54 Others are available upon request | Purified, vialled, cryopreserved, PfSPZ | 20µL Each vial contains a target of 15,000 PfSPZ | Please inquire with our sales department about pricing |
| Infectious Sanaria® PfSPZ | SAN-304 | | | | 20µL Each vial contains a target of 50,000 PfSPZ/20µL | |
| Infectious Sanaria® PfSPZ | SAN-301 | | | | 20µL Each vial contains a target of 150,000 PfSPZ/20µL | |
| Infectious Sanaria® PfSPZ | SAN-302 | | | | 20µL Each vial contains a target of 450,000 PfSPZ/20µL | |
| Infectious Sanaria® PfSPZ | SAN-303 | | | | 20µL Each vial contains a target of 1,000,000 PfSPZ/20µL | |
| Attenuated Sanaria® PfSPZ | SAN-409 | | | | 20µL Each vial contains a target of 150,000 PfSPZ/20µL | |
| Attenuated Sanaria® PfSPZ | SAN-410 | | | | 20µL Each vial contains a target of 450,000 PfSPZ/20µL | |
| Attenuated Sanaria® PfSPZ | SAN-411 | | | | 20µL Each vial contains a target of 900,000 PfSPZ/20µL | |

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Plasmodium yoelii Sporozoites (not for human use)

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|---|-----------------------|-------------------|----------------------|--|--|--|
| Sanaria® PySPZ-PfCSP Infectious Sporozoites | SAN-421 | Non-Aseptic | Py=17XNL Pf=3D7 NF54 | Purified, vialled, cryopreserved, PySPZ expressing CSP | 20µL Each vial contains a target of 8,000 SPZ/20µL | Please inquire with our sales department about pricing |
| Sanaria® PySPZ Infectious Sporozoites | SAN-407 | Aseptic | 17XNL | Purified, vialled, cryopreserved, PySPZ | 20µL Each vial contains a target of 15,000 SPZ/20µL | |
| Sanaria® PySPZ Infectious Sporozoites | SAN-406 | | | | 20µL Each vial contains a target of 50,000 SPZ/20µL | |
| Sanaria® PySPZ Infectious Sporozoites | SAN-408 | | | | 20µL Each vial contains a target of 100,000 SPZ/20µL | |
| Sanaria® PySPZ Infectious Sporozoites | SAN-405 | | | | 20µL Each vial contains a target of 150,000 SPZ/20µL | |
| Sanaria® PySPZ Attenuated Sporozoites | SAN-422 | Aseptic | 17XNL | Purified, vialled, cryopreserved, PySPZ | 20µL Each vial contains a target of 150,000 SPZ/20µL | |

Plasmodium berghei Sporozoites (not for human use)

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|--------------------------------------|-----------------------|-------------------|---------------|---|--|--|
| Sanaria® PbSPZ Infectious Sporozoite | SAN-416 | Aseptic | Anka OR NK65 | Purified, vialled, cryopreserved, PbSPZ | 20µL Each vial contains a target of 15,000 SPZ/20µL | Please inquire with our sales department about pricing |
| Sanaria® PbSPZ Infectious Sporozoite | SAN-417 | | | | 20µL Each vial contains a target of 50,000 SPZ/20µL | |
| Sanaria® PbSPZ Infectious Sporozoite | SAN-418 | | | | 20µL Each vial contains a target of 100,000 SPZ/20µL | |
| Sanaria® PbSPZ Infectious Sporozoite | SAN-419 | | | | 20µL Each vial contains a target of 150,000 SPZ/20µL | |



Plasmodium vivax Sporozoites (not for human use)

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|--|-----------------------|-------------------|---|---|--|---|
| Sanaria® PvSPZ Infectious Sporozoites | SAN-412 | Aseptic | Chesson Others are available upon request | Purified, vialled, cryopreserved, PvSPZ | 20µL Each vial contains a target of 15,000 SPZ/ 20µL | Please inquire with our sales department about pricing |
| Sanaria® PvSPZ Infectious Sporozoites | SAN-413 | | | | 20µL Each vial contains a target of 50,000 SPZ/ 20µL | |
| Sanaria® PvSPZ Infectious Sporozoites | SAN-414 | | | | 20µL Each vial contains a target of 100,000 SPZ/20µL | |
| Sanaria® PvSPZ Infectious Sporozoites | SAN-415 | | | | 20µL Each vial contains a target of 150,000 SPZ/20µL | |

Plasmodium falciparum Stage-Specific Slides

| PRODUCT NAME | PRODUCT NUMBER | STRAIN | PRODUCT DESCRIPTION | ITEM DESCRIPTION | PRICE PER |
|---|----------------|-------------|--|--|--|
| Sanaria® PfSPZ Sporozoite Slides | SAN-602 | NF54 or 7G8 | 12-well slides of purified PfSPZ for immunofluorescence assays | 2,000 purified PfSPZ per well | Please inquire with our sales department about pricing |
| Sanaria® Pf Asexual Erythrocytic Stage Slides | SAN-603 | | 12-well slides of asexual erythrocytic stage parasites for immunofluorescence assays | Total parasitemia of $\geq 0.5\%$ including schizonts determined by Giemsa-stained smears. | |
| Sanaria® Pf Sexual (Gametocyte) Stage Slides | SAN-604 | | 12-well slides of sexual stage parasites for immunofluorescence assays | Total gametocytemia of $\geq 0.5\%$ determined by Giemsa-stained smears. | |
| Sanaria® Pf Asexual Erythrocytic Stage Slides | SAN-608 | | Thin or thick blood smear slides Asexual erythrocytic stage parasites | Methanol fixed, unstained | |
| Sanaria® Pf Sexual (Gametocyte) Stage Slides | SAN-609 | | Thin or thick blood smear slides Sexual stage parasites | Methanol fixed, unstained | |

Custom Plasmodium Stage-Specific Slides

| PRODUCT NAME | PRODUCT NUMBER | STRAIN | PRODUCT DESCRIPTION | ITEM DESCRIPTION | PRICE PER |
|---|----------------|--------|--|---|--|
| Sanaria® Plasmodium Sporozoite Slides | SAN-605 | Custom | 12-well slides of purified SPZ for immunofluorescence assays | 2,000 purified SPZ per well | Please inquire with our sales department about pricing |
| Sanaria® Plasmodium Asexual Erythrocytic Stage Slides | SAN-606 | | 12-well slides of asexual erythrocytic stage parasites for immunofluorescence assays | Total parasitemia of \geq TBD% with schizonts determined by Giemsa-stained smears | |
| Sanaria® Plasmodium Sexual (Gametocyte) Stage Slides | SAN-607 | | 12-well slides of sexual stage parasites for immunofluorescence assays | Total gametocytemia of \geq TBD% determined by Giemsa-stained smears | |
| Sanaria® Plasmodium Asexual Erythrocytic Stage Slides | SAN-610 | | Thin or thick blood smear slides Asexual erythrocytic stage parasites | Methanol fixed, unstained | |
| Sanaria® Plasmodium Sexual Erythrocytic (Gametocyte) Stage Slides | SAN-611 | | Thin or thick blood smear slides Sexual stage parasites | Methanol fixed, unstained | |

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Culture

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|---|-----------------------|-------------------|---------------|---|--|--|
| 15 mL Sanaria® Pf Culture (asexual) + Sanaria® Complete Growth Media + Sanaria® RBC | SAN-701 | Aseptic | NF54 or 7G8 | Asexual Pf blood culture (live culture). | ~15 mL >70 % ring stages 2-3.5% parasitemia 3-5% hematocrit | Please inquire with our sales department about pricing |
| | | Sterile | NA | Media used for culturing Pf erythrocytic stage parasites. | 100 mL proprietary formulation | |
| | | Aseptic | | RBCs used for culturing Pf parasites. | ~ 1-5 mL 50% RBC | |
| 30 mL Sanaria® Pf Culture (asexual) + Sanaria® Complete Growth Media + Sanaria® RBC | SAN-702 | Aseptic | NF54 or 7G8 | Asexual Pf blood culture (live culture). | ~30 mL >70 % ring stages 2-3.5% parasitemia 3-5% hematocrit | |
| | | Sterile | NA | Media used for culturing Pf erythrocytic stage parasites. | 100 mL proprietary formulation | |
| | | Aseptic | | RBCs used for culturing Pf parasites. | ~ 10-11 mL 50% RBC | |

Custom Culture

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>ASEPTICITY</u> | <u>STRAIN</u> | <u>PRODUCT DESCRIPTION</u> | <u>ITEM DESCRIPTION</u> | <u>PRICE PER</u> |
|--|-----------------------|-------------------|---------------|--|---|--|
| Custom Sanaria® Plasmodium Culture (asexual) + Sanaria® Complete Growth Media + Sanaria® RBC | SAN-703 | Aseptic | Custom | Custom asexual Plasmodium blood culture (live culture) | Custom volume TBD % ring stages TBD% parasitemia TBD% hematocrit | Please inquire with our sales department about pricing |
| | | Sterile | NA | Media used for culturing custom Plasmodium parasites. | 100 mL Complete growth media | |
| | | Aseptic | | RBCs used for culturing custom Plasmodium parasites. | ~ 10-11 mL 50% RBC | |

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Antibodies

| PRODUCT NAME | PRODUCT NUMBER | PRODUCT DESCRIPTION | PRICE PER |
|---|----------------|--|--|
| 2A10 MAb-PfCSP | PP-M001 | The sale of this antibody is currently restricted . Inquire for more details. | Please inquire with our sales department about pricing |
| mAbPfEXP-1 | PP-M002 | Purified, vialled. This antibody targets Pf Exported Protein 1 (EXP-1). PfEXP-1 is an integral membrane protein expressed during the parasite's life cycle in both the liver and blood stages. | |
| MAbPfCelTOS IgG1 | PP-M003 | Purified, vialled This antibody targets the Pf Cell-Traversal Protein for Ookinetes and Sporozoites (CelTOS). PfCelTOS is essential for both ookinete invasion of the mosquito midgut and sporozoite invasion of the human liver. | |
| MAbPfCelTOS IgM | SAN-709 | Purified, vialled This antibody targets the Pf Cell-Traversal Protein for Ookinetes and Sporozoites (CelTOS). PfCelTOS is essential for both ookinete invasion of the mosquito midgut and sporozoite invasion of the human liver. | |
| PfMSP1 AD233 mAb A6071618 | SAN-710 | Purified, vialled This antibody targets <i>Plasmodium falciparum</i> Merozoite Surface Protein 1 (PfMSP1). | |
| PfEBA 175 R217 purified mAb A7061870 | SAN-711 | Purified, vialled This antibody targets the Erythrocyte Binding Antigen 175 — a 175 kDa protein on the Pf malaria parasite's merozoite surface that is essential for red blood cell invasion, specifically binding to glyphorin A via its receptor-binding Region II (RII). | |
| HSP70 Purified mAb cell line 4C9. | SAN-712 | Purified, vialled This is a purified mouse monoclonal antibody (IgG) generated from the 4C9 hybridoma cell line, specific to Plasmodium falciparum Heat Shock Protein 70 (PfHSP70). PfHSP70 is a key molecular chaperone involved in parasite protein folding, stress response, and survival under febrile conditions. The 4C9 clone selectively binds to PfHSP70. Sumana confirmed that it is actually general HSP70. Also, need legal approval from Zavala lab, JHU. 2021 | |
| Anti-PfCSP Polyclonal antibodies (rabbit) | SAN-707 | Polyclonal serum, vialled These are antibodies generated in rabbits by immunizing them with the Plasmodium falciparum sporozoites (PfSPZ). Being polyclonal, they consist of a mixture of antibody clones that recognize multiple epitopes on PfCSP, offering broad binding. | |
| Anti-PfCSP Polyclonal antibodies (mouse) | SAN-708 | Polyclonal serum, vialled This antibody targets the <i>Plasmodium falciparum</i> circumsporozoite protein (PfCSP), a key surface protein on the sporozoite stage of the malaria parasite. | |

Recombinant Proteins

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>PRODUCT DESCRIPTION</u> | <u>PRICE PER</u> |
|--------------------------|-----------------------|---|--|
| Recombinant PfCSP | PP-P001 | Expressed in <i>Pichia pastoris</i> . Purified, characterized, vialled. | Please inquire with our sales department about pricing |
| Recombinant PfCeITOS | PP-P002 | | |
| Recombinant PfEXP-1 | PP-P005 | | |
| Recombinant PfEBA175 RII | PP-P007 | | |
| Recombinant PvCSP | PP-P006 | | |

Kits

| <u>PRODUCT NAME</u> | <u>PRODUCT NUMBER</u> | <u>PRODUCT DESCRIPTION</u> | <u>PRICE PER</u> |
|--------------------------|-----------------------|---|---|
| Sporozoite Counting Kit. | SAN-80X | <p>This kit contains materials (specialized slides, diluent, and instructions) required for accurately counting sporozoites at a concentration of $>7.5 \times 10^5$ SPZ/mL.</p> <p>This kit supplies enough materials for five individual sample enumerations.</p> | Please inquire with our sales department about pricing. |

Service Offerings

For Research and Clinical

General Consulting Services

| <u>SERVICE DESCRIPTION</u> | <u>PRICE</u> |
|---|---|
| <p>With extensive experience in grant writing, global health, and clinical trials in medium- to low-income countries, as well as international collaboration with institutional partners, Sanaria offers a range of expert services tailored to the needs of institutions and companies.</p> <p>Our service offerings include, but are not limited to:</p> <ul style="list-style-type: none"> • Grant Writing and Submission: Comprehensive support in developing, writing, and submitting competitive grant proposals. • Investigational New Drug (IND) Development: Strategic guidance and document preparation to support successful IND applications. • Chemistry, Manufacturing, and Controls (CMC) Development: Expert support in designing and managing CMC programs to meet regulatory requirements and ensure product quality. | <p>Please inquire with our sales department about pricing</p> |

Malaria Consulting Services

| <u>SERVICE DESCRIPTION</u> | <u>PRICE</u> |
|--|--|
| <p>Sanaria offers expert consulting services to empower customers and partners in the effective use of our products, thereby accelerating success in malaria research, clinical trials, and product development.</p> <p>Service Offerings Include but are not Limited to:</p> <ul style="list-style-type: none"> • Product Implementation Support: Guidance on the preparation, handling, and use of Sanaria's products, including training for clinical and laboratory staff. • Study Design and Protocol Development: Expert input on clinical trial design, CHMI protocols, and integration of Sanaria products into malaria research projects. • Regulatory consulting: Support preparing submissions to regulatory bodies and ethics committees, including IND/CTA documentation and IRB/IEC packages. • Operational and Logistical Planning: Advice on site selection, cold chain logistics, data management, and risk mitigation strategies. • Capacity Building and Training: Tailored workshops and on-site training to build sustainable local expertise in malaria diagnostics, CHMI, vaccine administration, and more. • Collaborative Scientific Advising: Strategic partnership on grant applications, publications, and the advancement of novel malaria interventions. | <p>Please inquire with our sales department about pricing</p> <p>Complimentary 30-minute consultation for initial product orders over \$5,000.</p> |

Research Services

| SERVICE DESCRIPTION | PRICE |
|--|---|
| <p>Customized end-to-end solutions for malaria research. Leveraging our world-leading expertise in malaria parasite research, production, challenge models, and clinical trial support, we partner with academic institutions, government agencies, and industry leaders to advance malaria knowledge, prevention, and treatment.</p> <p>Our capabilities include GMP-grade sporozoite production, monoclonal antibody production, design and execution of controlled human malaria infection (CHMI) studies, immunological and parasitological assay development, and regulatory support for IND-enabling activities. We collaborate with global partners to deliver solutions tailored to customers' scientific, regulatory, and logistical needs.</p> | <p>Please inquire with our sales department about pricing</p> |

Manufacturing Services

| SERVICE DESCRIPTION | PRICE |
|--|---|
| <p>Customized Sporozoite Manufacturing Service designed to meet the specific research, development, and production needs of academic institutions, biotechnology firms, and pharmaceutical companies. Leveraging our unparalleled expertise in the aseptic production of <i>Plasmodium</i> sporozoites, Sanaria delivers high-quality, customizable sporozoite preparations.</p> <p>Sanaria's manufacturing capabilities of Custom Strains and Species include, but are not limited to, the production of <i>P. falciparum</i>, <i>P. vivax</i>, or other <i>Plasmodium</i> species sporozoites using standard or genetically modified parasite lines.</p> | <p>Please inquire with our sales department about pricing</p> |

Assay Services

| ASSAY NAME | SERVICE CODE | SERVICE DESCRIPTION | PRICE |
|---|--------------|---|---|
| Automated Immunofluorescence assay (aIFA) | SAN-801 | High-throughput microtiter plate-compatible PfSPZ automated immunofluorescence (aIFA) assay | Please inquire with our sales department about pricing |
| Automated Inhibition of Sporozoite Invasion (aISI) | SAN-802 | High-throughput microtiter plate-compatible inhibition of PfSPZ invasion (aISI) assay. | <p>Base Package</p> <ul style="list-style-type: none"> • 7 test specimens • Includes 3 control specimens • Total specimens analyzed: 10 <p>Control Specimens</p> <ul style="list-style-type: none"> • An additional 3 control specimens are added for every 35 test specimens <p>Replicate Testing for Research Use For research applications such as <i>in vivo</i> monoclonal antibody down-selection or vaccine construct selection, we recommend running the assay in replicate to strengthen data quality and confidence:</p> <ul style="list-style-type: none"> • Minimum: Duplicate testing • Optimal: Triplicate testing <p>Replicate testing enhances data robustness, improves statistical confidence, and supports more informed decision-making when advancing lead candidates. Costs scale with the number of replicates selected.</p> |
| Enzyme-Linked Immunosorbent Assay (IgG and IgM ELISA) | SAN-803 | ELISA measurement of IgG and IgM antibodies against multiple recombinant Pf proteins | Please inquire with our sales department about pricing |

Automated Immunofluorescence assay (aIFA): A high-throughput microtiter plate-compatible Plasmodium sporozoite automated immunofluorescence (aIFA) assay.

The immunogenicity of sera to the whole Plasmodium sporozoite is assessed using purified Plasmodium sporozoites (SPZ) from aseptic *Anopheles stephensi* mosquitoes produced by Sanaria. Serially diluted samples are incubated with the SPZ, and an immunofluorescence assay is performed in 96-well plates. Following incubation, plates are scanned using an Acumen eX3 laser scanning imaging cytometer, and fluorescence intensity is recorded for each serum dilution. Data are analyzed in GraphPad Prism, where fluorescence values are plotted against log-transformed serum dilutions to generate a four-parameter sigmoidal dose–response curve. Antibody titers are reported as the reciprocal serum dilution at which fluorescence intensity equals 2×10^5 arbitrary fluorescence units (AFU). The assay can be performed using sporozoites from *P. falciparum* (PfSPZ), *P. vivax* (PvSPZ), *P. knowlesi* (PkSPZ), or *P. yoelii* (PySPZ).

Automated Inhibition of Sporozoite Invasion (aISI): A high-throughput microtiter plate-compatible inhibition of Plasmodium sporozoite invasion (aISI) assay.

HC-04 (1F9) cells (hepatocytes) are cultured in complete medium on Entactin-Collagen IV-Laminin (ECL)-coated 96-well clear bottom black plates. Twenty-four hours later, cells are infected with aseptic, purified, cryopreserved Plasmodium sporozoites (SPZ), without or with sera diluted in a 12-point series. Three hours later, the cells are washed, and differential immunostaining is performed to differentiate between Plasmodium SPZ inside the hepatocytes and those outside the hepatocytes. The numbers and intensity of infected hepatocytes are counted by scanning the plates using an Acumen eX3 laser scanning imaging cytometer. The data obtained from the Acumen

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image cytometer are plotted to fit a 4-parameter sigmoidal curve in GraphPad Prism software using serum dilution (log transformed) as the x-axis variable and arbitrary fluorescence units on the y-axis. 80% inhibition is interpolated from the sigmoidal curves as the reciprocal serum dilution at which the fluorescent intensity of infected wells with serum was 20% of the negative control without serum. The inhibitory activity at each dilution of sera is computed as a percentage reduction in invasion compared to media alone in the absence of antibodies. This assay can be adapted for sporozoites from *Plasmodium falciparum* (PfSPZ), *P. vivax* (PvSPZ), *P. knowlesi* (PkSPZ), or *P. yoelii* (PySPZ). This assay format follows the published clinical standard described in: *Mordmüller et al., Nature (2017): Sterile protection against human malaria by chemoattenuated PfSPZ vaccine.*

Enzyme-Linked Immunosorbent Assay (IgG and IgM ELISA).

IgG and IgM antibody responses to a panel of recombinant *Plasmodium falciparum* proteins are quantified using enzyme-linked immunosorbent assay (ELISA). Serial dilutions of serum samples (run in triplicate) are applied to antigen-coated 96-well plates to assess antigen-specific immunogenicity. Optical density (OD) is measured using a SpectraMax Plus384 microplate reader, and data acquisition is performed with SoftMax Pro GXP software. Antibody titers are determined by fitting a four-parameter logistic curve, and results are reported as the reciprocal serum dilution corresponding to an OD of 1.0 (OD 1.0). The assay includes antigens from the following recombinant proteins: PfCSP, PyCSP, PvCSP, PfEXP1, PfMSP1, PfAMA1, PfCelTOS, and PfLSA1.