Towards malaria vaccine development –how basic researchers open the door to product development?-

GHIT-PDPs WEBINAR SERIES

Session 5　2022.3.24

愛媛大学 EHIME UNIVERSITY

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Department of Parasitology and Tropical Medicine,

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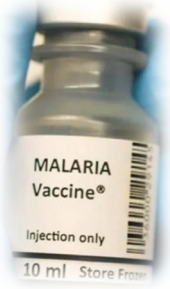
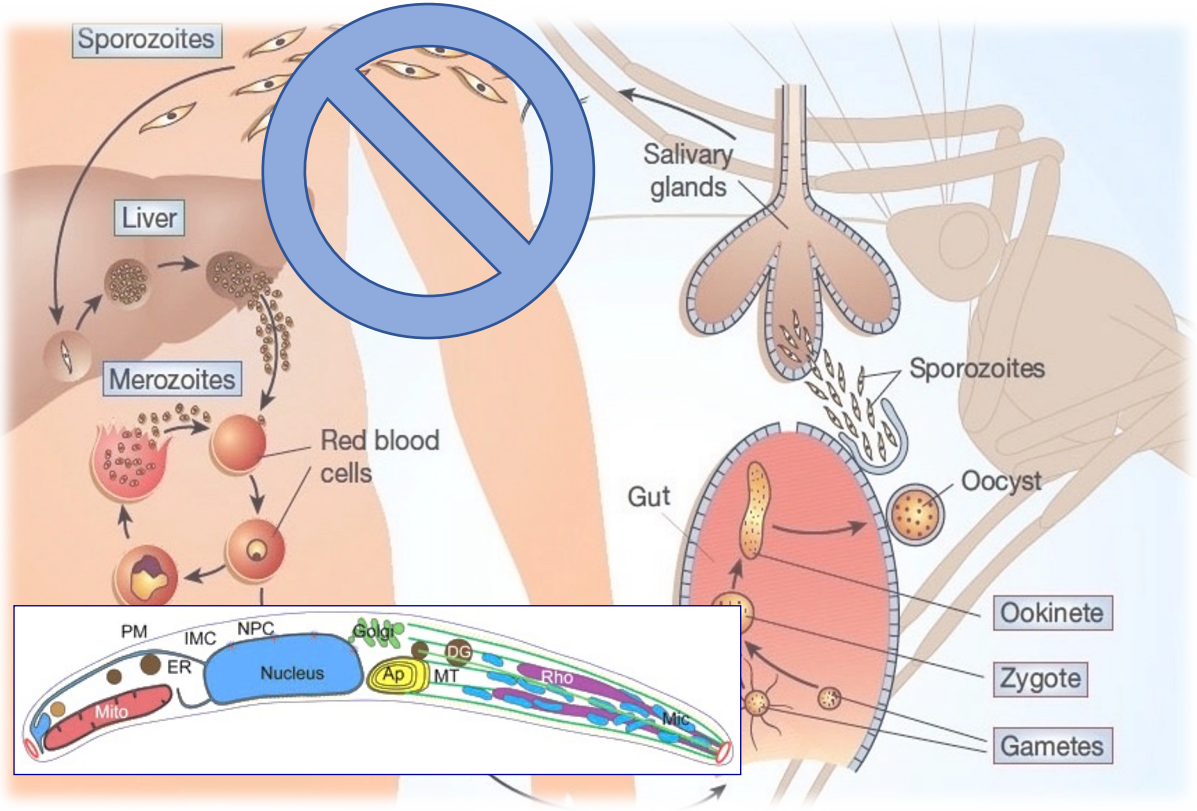
The first malaria vaccine to reduce infection: RTS,S

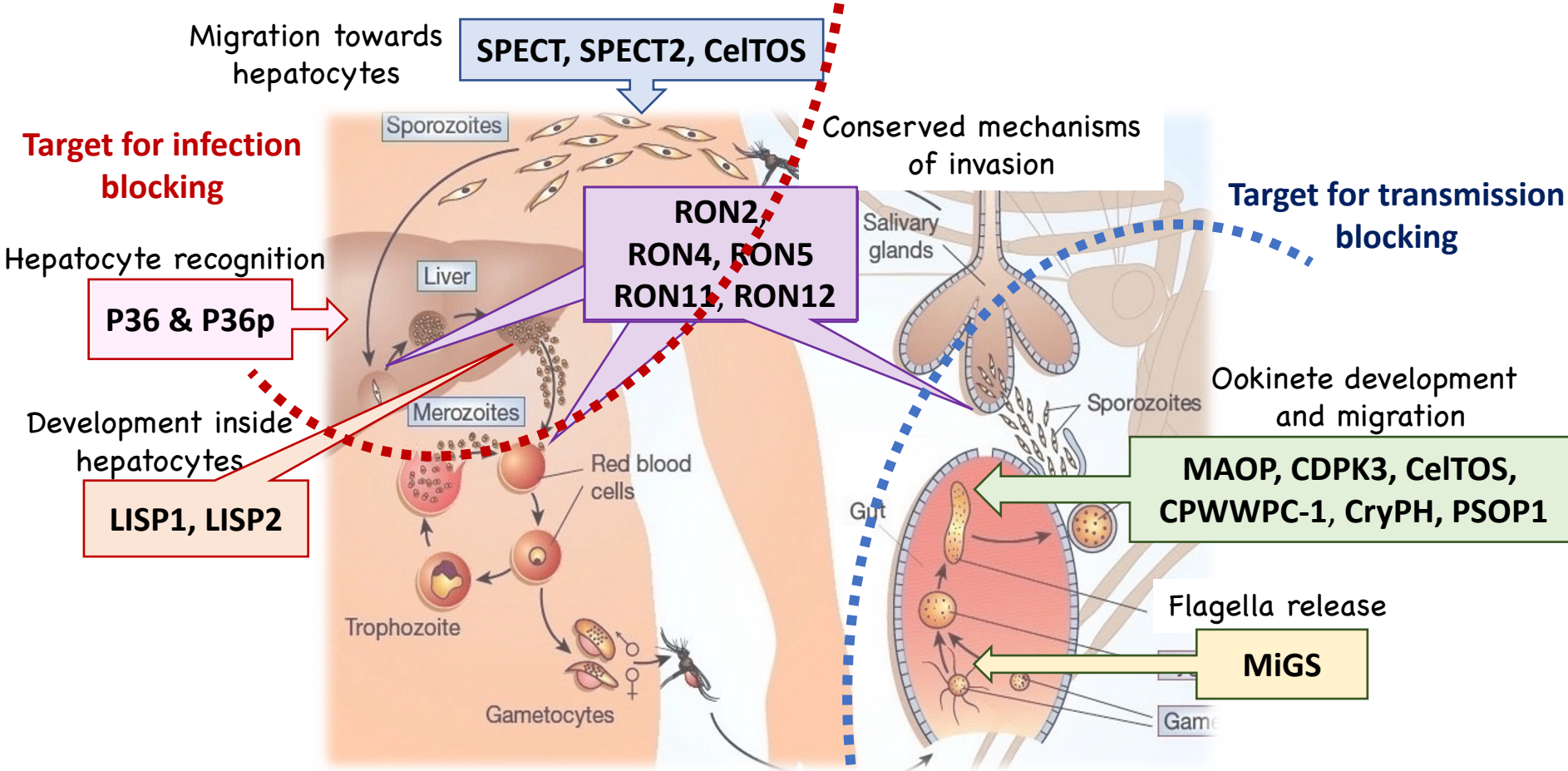


40% reduction in malaria episode.
The effects are affected by polymorphisms in CSP.

An improved infection inhibition strategy is urgently required!



Basic research to elucidate parasite infection



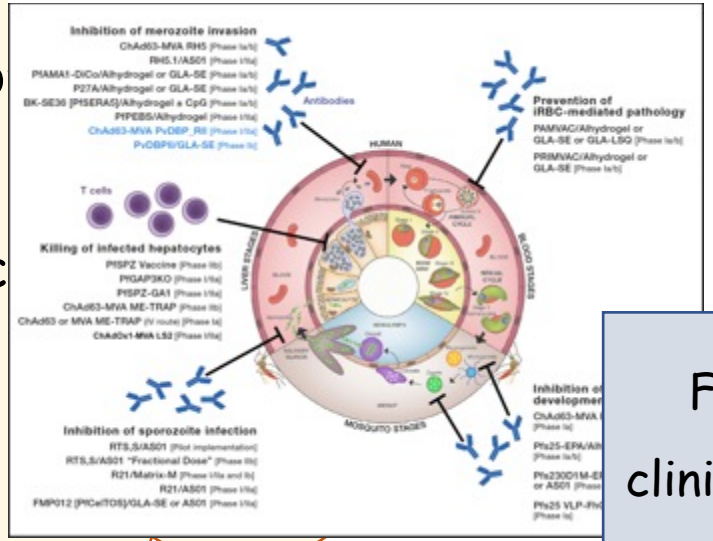
Long road for product development

Huge amount o

research required

identify vaccine c

Clinical study, Phase I/II



Further clinical study, Phase III

Product development

PDPs: Product development partners

Huge amount of ba

research required

order to identify vaccine

candidates

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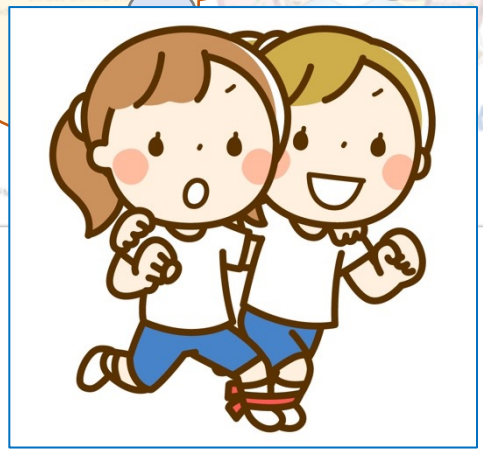
Global Health Innovative Technology Fund

mvi PATH

MALARIA VACCINE INITIATIVE

PATH



Further clinical study, Phase III

Product development

The history of collaboration with PDPs

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University at Buffalo The State University of New York
Sumitomo Dainippon Pharma
Penn University of Pennsylvania
TOKYO MEDICAL AND DENTAL UNIVERSITY TMDU
มหาวิทยาลัยมหิดล
PATH

Year	Partners	Objectives/Approach
2014	PATH-MVI	Evaluating Pf75 as a transmission blocking vaccine target
2016	PATH-MVI	Dissecting Pfs230 for functional subdomain for transmission blocking vaccine
2019	PATH-MVI, SUNY	Evaluating codelivery of Pfs230 and CSP with CoPoP for transmission & infection blocking vaccine
2020	PATH-MVI, Sumitomo Dainippon Pharm	Evaluate full-length CSP formulated with SA-1, in comparison with RTS,S/AS01 as a benchmark
2019	Mahidol University, University of Pennsylvania	Development of a novel Pvs25 nucleoside-modified mRNA vaccine that induces potent and long-lasting transmission blocking immunity

Catalyzed by

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Dissecting Pfs230 for functional subdomain (T2016-207)

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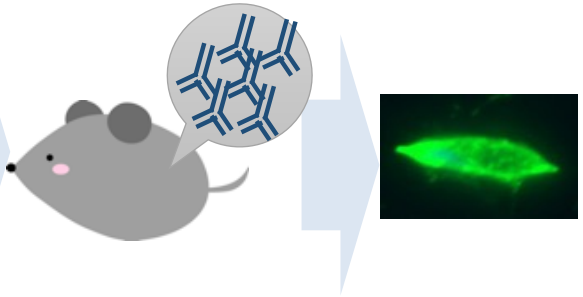
Protein production
(Pfs230)



Pfs230:
a promising target for transmission blocking vaccine
Tachibana, Wu, *et al*, 2011, *Clin Vaccine Immunol*

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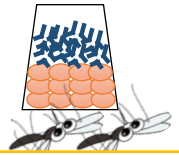
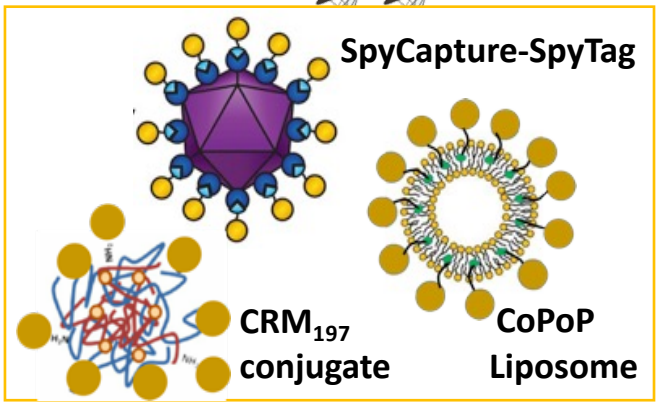
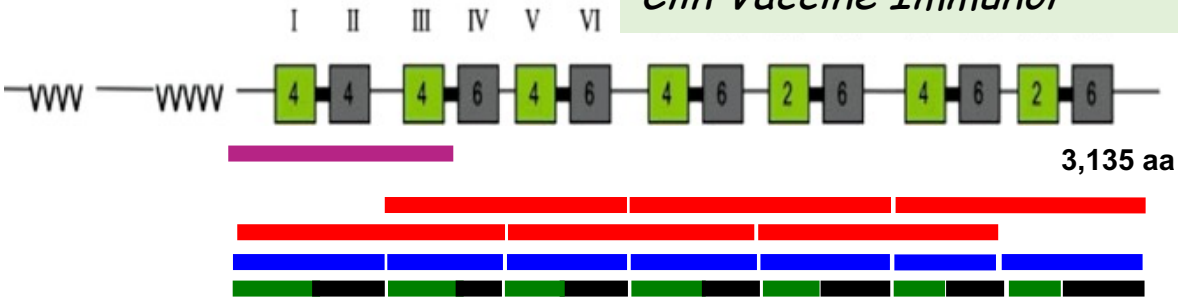




Evaluation of formulation

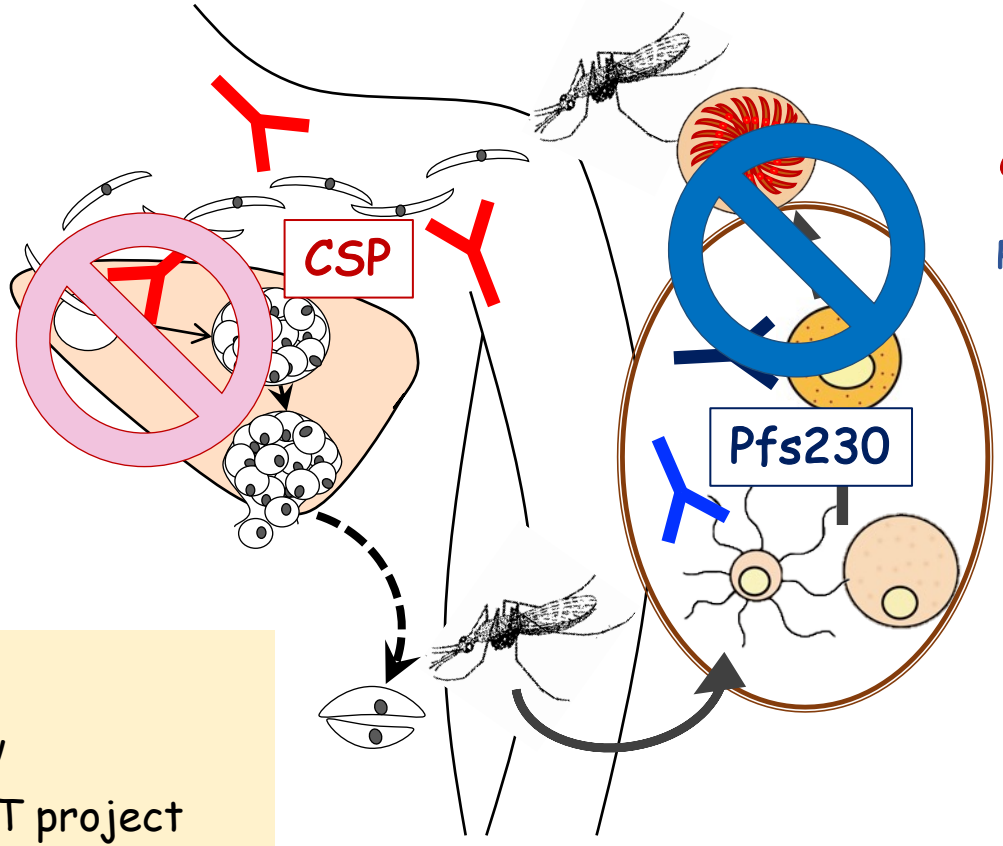


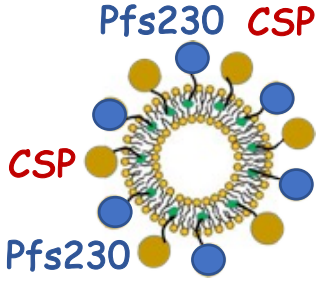
Outcome of Partnership

- Miura *et al., 2022, NPJ Vaccines*
- Tachibana *et al.*, 2019, *Vaccine*
- Continuation to next GHIT project (G2019-111)

Co-delivery of Pfs230C1 and CSP with CoPoP for multistage malaria vaccine (G2019-111)

70-80% reduction in the parasite burden in the liver!!





CoPoP

University at Buffalo
The State University of New York

Outcome of Partnership

- Huang *et al.*, under review
- Continuation to next GHIT project

Lessons learned, challenges and impact to our organization from the partnership

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Important for the partnership

- Common goal, vision, and passion
- Complementary skill sets and strengths
- Clear partner role and responsibility
- Respect each partner

Impact from the partnership

- Meet more collaborators with similar aims
- Start new projects with new approaches
- Find new demands of basic research for vaccine development

Thank you!