

Vaginal Rings: Products in development for HIV prevention and multipurpose technologies

Delivery System	Active Drug	Protects Against	Status	Developer
4-week silicone elastomer vaginal matrix ring	Dapivirine	HIV	Phase III clinical trials, results expected 2016	IPM
	Maraviroc	HIV	Phase I clinical trial complete, results expected 2013/2014	IPM
	Combination dapivirine-maraviroc	HIV	Phase I clinical trial complete, results expected 2013/2014	IPM
	Combination dapivirine-darunavir	HIV	Preclinical studies underway	CHAARM; IPM
	Various triple combinations of NNRTI, progestin + anti-HSV agent	HIV	Preclinical studies underway	Queens University Belfast
60-day silicone elastomer ring	Dapivirine; levonorgestrel	HIV; pregnancy	Preclinical studies underway; Phase I clinical trial planned for 2015	IPM
4-week hollow polyurethane intravaginal ring	Tenofovir disoproxil fumarate	HIV (will be evaluated in women using injectable hormonal contraception)	Preclinical results Phase I clinical trial scheduled for late 2013	CONRAD
	Tenofovir disoproxil fumarate powder and sodium chloride	HIV	Preclinical results*	CONRAD
90-day polyurethane intravaginal ring	Tenofovir; levonorgestrel	HIV; HSV-2; pregnancy	Preclinical results; Phase I clinical trial planned for early 2014	CONRAD
	Tenofovir	HIV; HSV-2	Preclinical results; Phase I clinical trial planned for late 2013	CONRAD
Polyurethane matrix intravaginal ring	Tenofovir; IQP-0528	HIV; HSV-2	Preclinical results	CONRAD
Silicone "POD" IVR (Versaring)	Tenofovir	HIV; HSV-2	Preclinical results	CONRAD; Auritec Pharmaceuticals
BioRing (nanoporous hydrophilic polymeric hydrogel)	Ferrous gluconate; ascorbic acid; pharmalytes; boc-lysinated betulonic acid; tenofovir	HIV; pregnancy	Preclinical studies underway	BioRing LLC
Silicone elastomer ring with 2 cores	Nestorone® and ethinyl estradiol	Pregnancy	Pending submission to the FDA	Population Council
Silicone reservoir ring	Nestorone® and estrogen estradiol	Pregnancy	Phase II	Population Council
Silicone layered ring	Ulipristal	Pregnancy	Phase II	Population Council
90-day ethylene vinyl acetate (EVA) or silicone intravaginal ring	MIV-150; zinc acetate; carrageenan	HIV; HSV-2; HPV	Preclinical studies underway	Population Council
	MIV-150; zinc acetate; carrageenan; levonorgestrel	HIV; HSV-2; HPV; pregnancy	Preclinical studies underway	Population Council
	Griffithsin	HIV; HSV-2	Early development	Population Council
Silicone "Ab POD" IVR	Monoclonal antibodies (Abs)	HIV; HSV-2	Preclinical NHP** studies 2014-2015	Antibody IPCP (ReProtect, Auritec, Mapp)
Reusable Duet/IVR + Ab capsules that are replaced by the end user	Monoclonal antibodies (Abs)	HIV; HSV-2	Preclinical NHP studies 2014-2015	Antibody IPCP (ReProtect, Auritec, Mapp)
TBD	Immunogens (trimeric gp140 boosts following DNA prime), and microbicides (1% tenofovir or dapivirine IVR) via an intravaginal ring. Mucosal adjuvant R848 (a TLR 7/8 agonist) to sustain mucosal memory	HIV; HSV-2	Early development	Imperial College, Queens University Belfast
TBD	L2 epitope fusion with griffithsin; intravaginal ring for burst release of HPV vaccine and sustained release of griffithsin as microbicide	HIV; HPV; HSV-2	Early development	University of Louisville

* Preclinical Results refers to those ensuing from animal testing.

** NHP refers to non-human primate studies.

Sources: AVAC PxRD, www.avac.org/pxrd; www.clinicaltrials.gov; CAMI MPT Microbicides and Devices Database, www.cami-health.org/mpt/Prevention-Targets.php.