

NIAC

Trends for future Immunisation schedules (and some other stuff of interest)

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Vaccines in Development

- Universal influenza
- Group B Strep
- Norovirus
- MenABCWY
- TB
- Gonorrhoea, syphilis
- RSV
- Malaria, dengue
- Shigella, ETEC
- Ebola, Zika
- Lassa, Nipah
- Cancer
- Alzheimer's
- Elderly (!)

Innovative delivery mechanisms

- Dermal, transcutaneous:
elastic vesicles, microneedles, jet injectors, nanoparticles
- Mucosal:
intranasal, sublingual, pulmonary, gut

Novel routes, mechanisms

Cutaneous immunization

Epidermal powder immunization
(DNA-coated gold particles or vaccine powders)

Liquid-jet injection
(Off-the-shelf vaccine formulations)

Topical application
(Adjuvant patches, colloidal carriers, ultrasound or microneedles)

Mucosal immunization

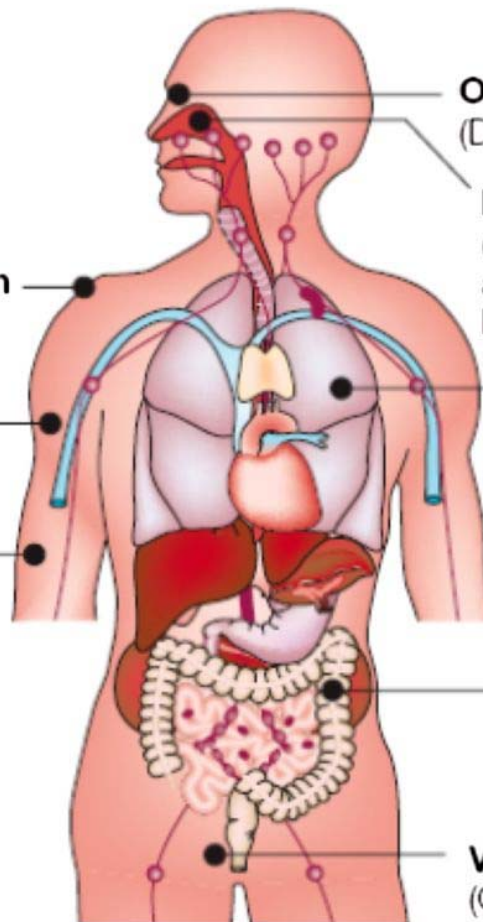
Ocular immunization
(Drops)

Nasal immunization
(Sprays and drops containing adjuvants plus liquid formulations, liposomes or microspheres)

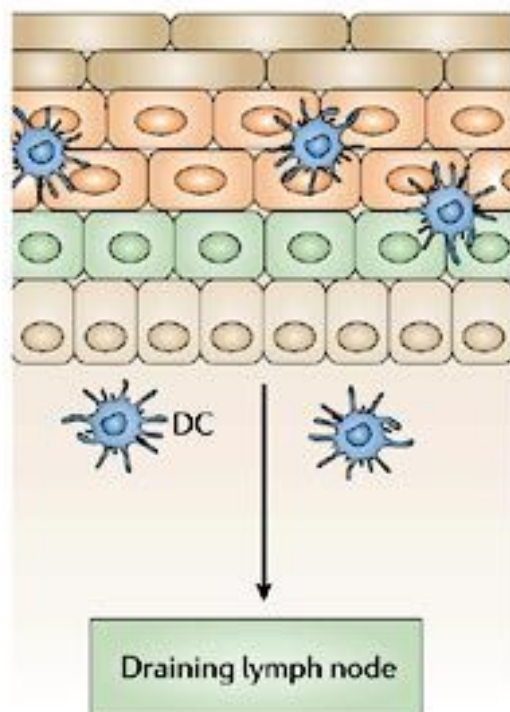
Pulmonary immunization
(Aerosols or powders)

Oral immunization
(Liquid formulations and pills containing adjuvants plus liposomes, microspheres or bacterial ghosts)

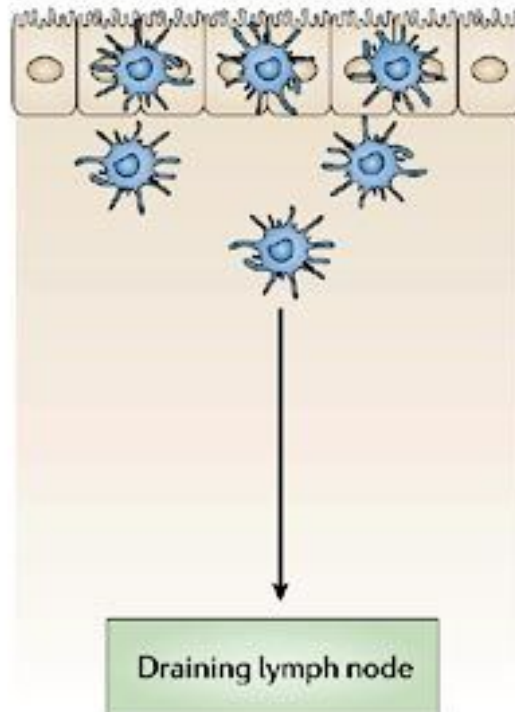
Vaginal or rectal immunization
(Creams containing adjuvants)



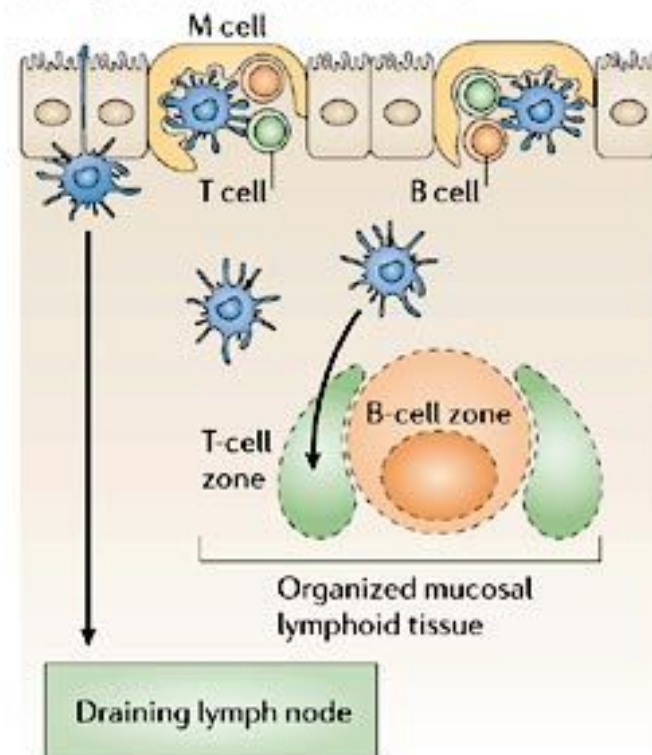
Oral cavity and vagina



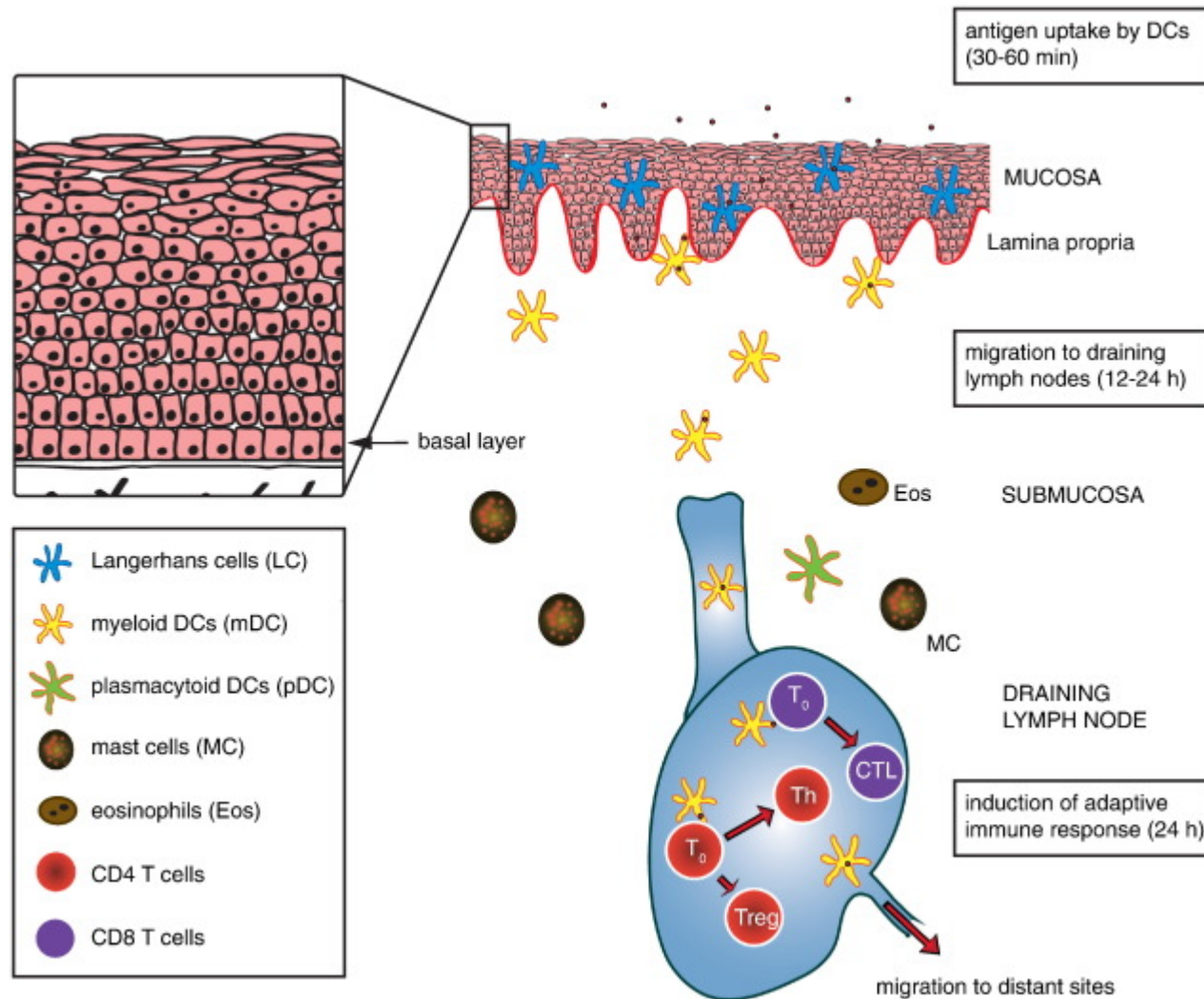
Nose and airways



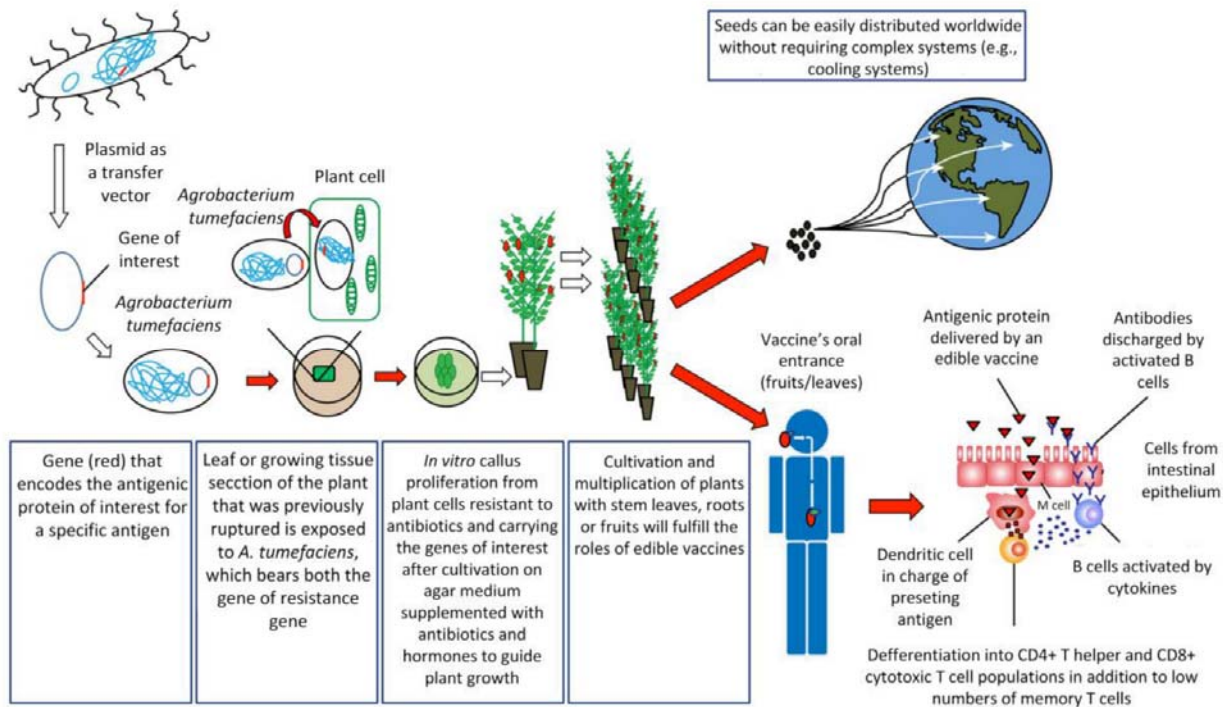
Follicle-associated epithelium: small intestine, colon, rectum, tonsils and adenoids



Mucosal vaccines

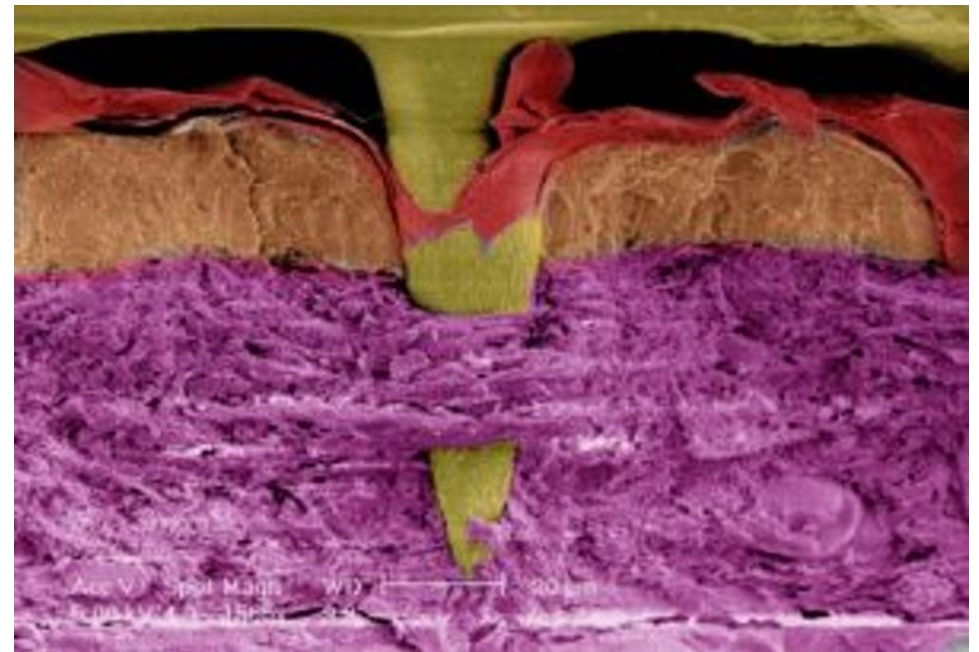
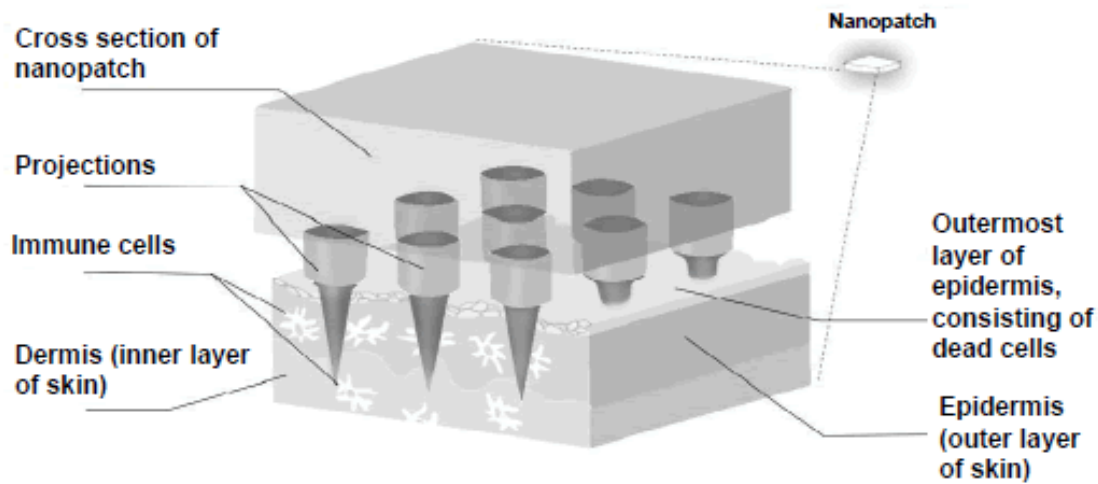


Edible vaccines

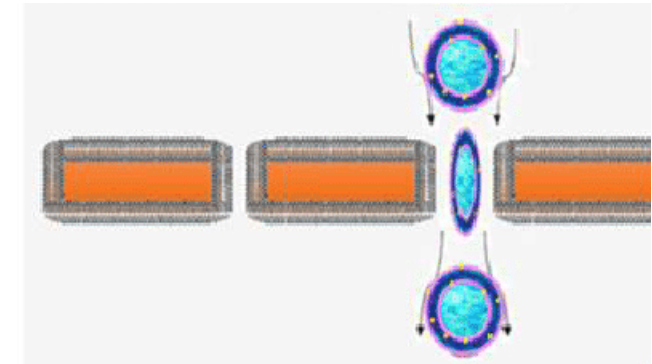
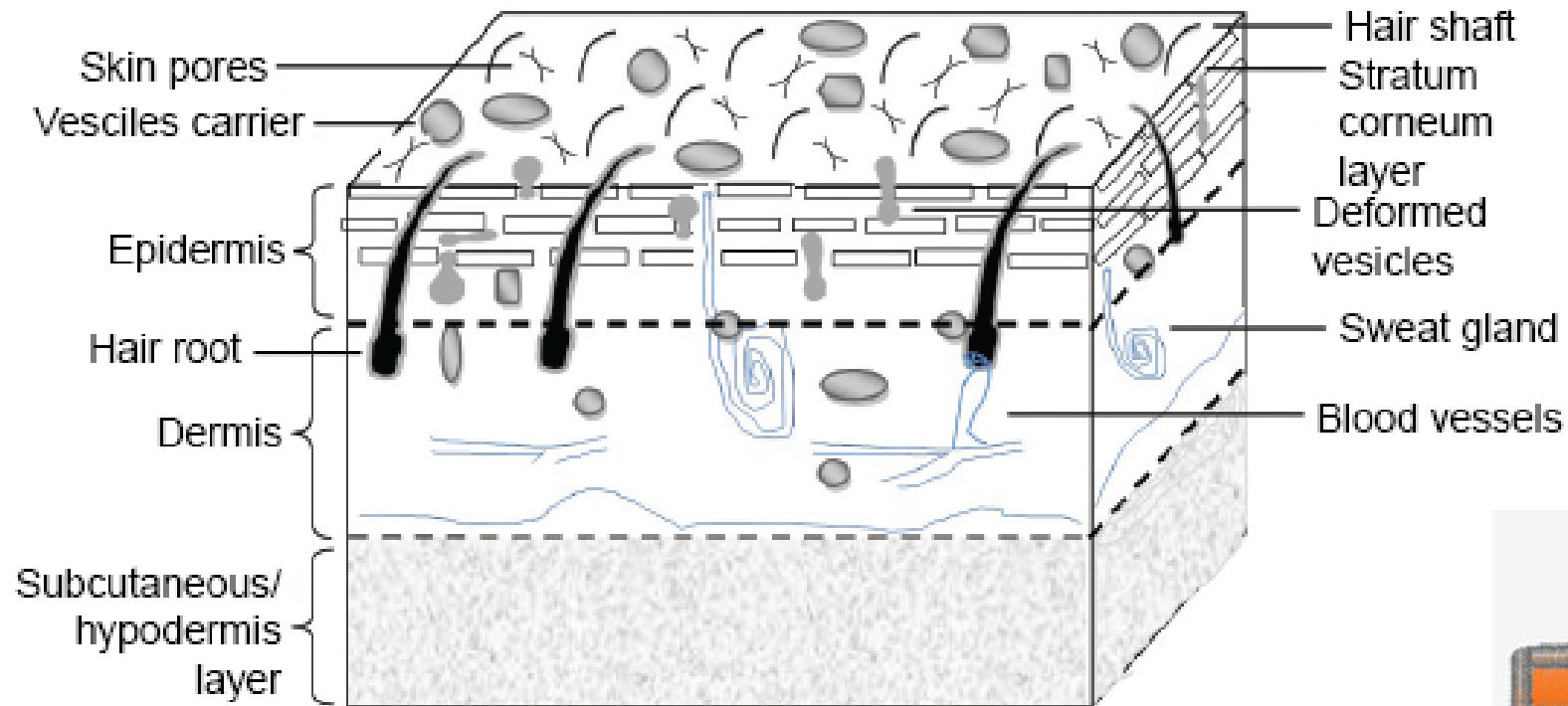


- identify gene encoding the antigenic protein
- transfer gene into plant
- process the food
- edible vaccine consumed
- passage of antigen to dendritic cells
- immune response involving B and T cells

Nanopatch delivery system



Elastic vesicles for drug delivery



Disposable-Syringe Jet Injectors



Immunisation schedule Sweden

Age	School year	Vaccination against	Dose
3 months		diphtheria, tetanus, pertussis (whooping cough), polio, Haemophilus influenzae type b (Hib), pneumococcal disease	dose 1
5 months		diphtheria, tetanus, pertussis (whooping cough), polio, Haemophilus influenzae type b (Hib), pneumococcal disease	dose 2
12 months		diphtheria, tetanus, pertussis (whooping cough), polio, Haemophilus influenzae type b (Hib), pneumococcal disease	dose 3
18 months		measles, mumps, rubella (German measles)	dose 1
5 years		diphtheria, tetanus, pertussis (whooping cough), polio	dose 4
	1-2	measles, mumps, rubella (German measles)	dose 2
	5-6	human papilloma virus (HPV) (girls)	dose 1-2
	8-9	diphtheria, tetanus, pertussis (whooping cough)	dose 5

On NIAC Agenda

- BCG for at-risk
- Universal childhood influenza vaccination
- Quadrivalent influenza vaccine
- Adjuvanted influenza vaccine (aTIV, Fluad)
- Varicella/zoster vaccine
- HPVV for boys
- MenACWY vaccine
- NITAG