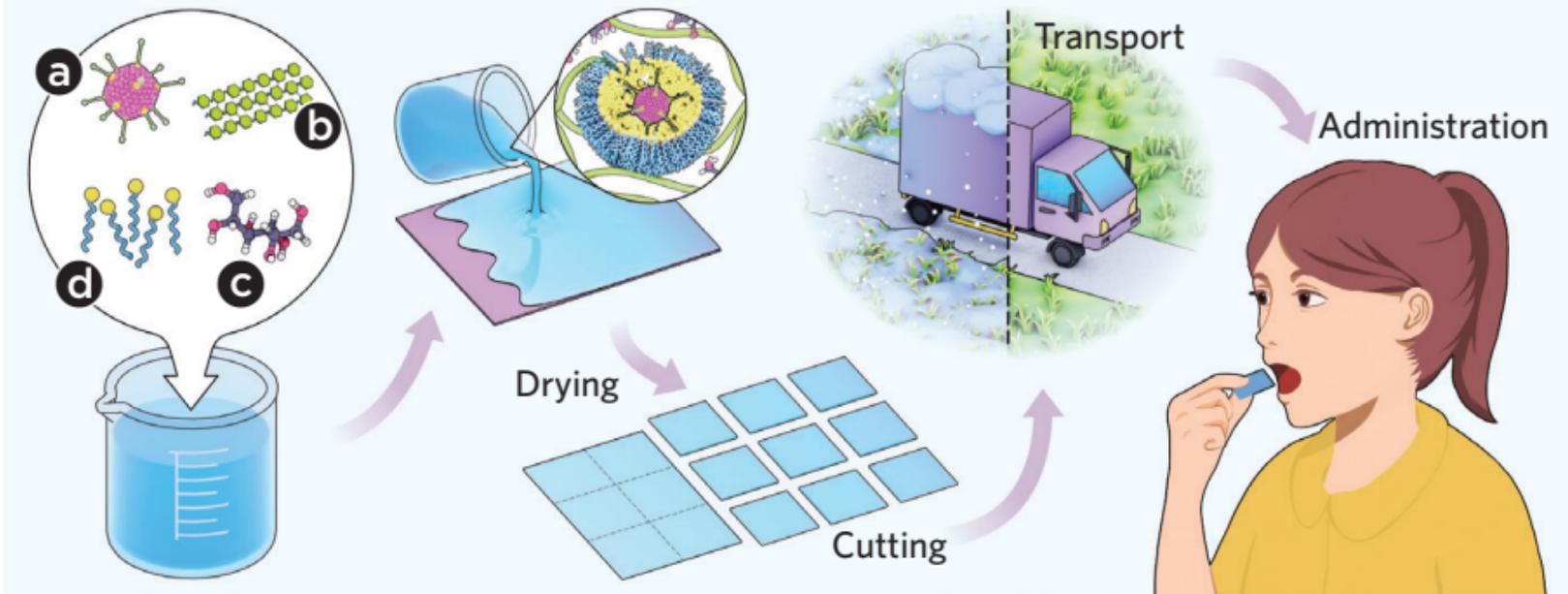


(a) Attenuated virus, (b) Methylcellulose, (c) Sugar alcohol, (d) Surfactant



**NO VIALS, NO FRIDGES, NO NEEDLES:** To make a film-based vaccine, a mixture containing attenuated virus, methylcellulose, sugar alcohol, and surfactant would be poured out as thin layers and allowed to air dry in sterile conditions for eight hours. These flexible, lightweight sheets could then, in principle, be packaged and transported without the need for vials or protection from extreme temperatures. At their destination, the vaccines would be given orally to subjects, thus eliminating the need for syringes, needles, and trained personnel.