KINETIC VACUUM TREATMENT DEVICES, SYSTEMS, AND METHODS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of U.S. Provisional Application No. 63/498,690, filed April 27, 2023, the entire contents of which are incorporated herein by this reference.

TECHNICAL FIELD

[0002] The present invention relates to devices, assemblies, and systems for gripping and/or deforming tissue with vacuum pressure and delivering fluid into the tissue.

BACKGROUND

[0003] Numerous and varied techniques have been developed for enhancing delivery of agents *in vivo* into tissue. Some of these techniques involve modes of injecting the agent into the tissue. Such modes including certain types of needle injection (e.g., Mantoux injection, side-port injection) and other injection types, such as jet injection. Other techniques for enhancing agent delivery *in vivo* involve modes of spreading or dispersing an injected agent within the tissue and/or across various layers of tissue or across the same layer of tissue. Iontophoresis, microneedle arrays, suction-cup or vacuum-cup treatments are examples of such modes. Yet other techniques for enhancing agent delivery *in vivo* involve modes that increase agent uptake directly into target cells within the tissue. Electroporation and sonoporation are examples of such a mode. Additional techniques for enhancing agent delivery *in vivo* involve modes that include pairing the agent with an adjuvant known to enhance the immune response(s) elicited by the agent. Some techniques accomplish multiple of the foregoing modes for enhancing agent delivery *in vivo*. For example, vacuum-assisted electroporation (VEP) treatments have been shown to enhance agent delivery *in vivo* by mode of increasing injectate dispersion within tissue and by mode of increasing agent uptake directly into target cells within the tissue.