

# modified and targeted delivery technologies

Lonza Pharma & Biotech utilizes a full range of technologies to modulate pharmacokinetics of drug compounds, often in conjunction with other enabling technologies, e.g. solubility enhancement, to optimize drug performance and therapeutic effect.

Leveraging our depth in drug delivery technologies, we tailor the formulation approach taken to the specific characteristics of the drug or drug product intermediate, the target product profile, and the

phase of development. Several of our delivery technologies are proprietary and have been developed to meet specific formulation challenges, e.g. asymmetric membrane technology (AMT) and enTRinsic™ Drug Delivery Technology.

Special processing techniques and customized, phase-appropriate equipment ensure optimized product development from feasibility assessments through clinical and commercial scale.

	AMT	SCT	Matrix / bi-layer	LMP	Dual capsule	pH trigger	Time trigger	Diffusion control	Erosion control
Solubilized form		●	●		●	●	●	●	●
IR pulse	●	●	●	●	●	●	●	●	●
Delayed pulse (late GI target)		●		●	●	●	●		
Fast controlled release (> 6 hours)	●	●	●	●	●			●	●
Slow controlled release (> 6 hours)	●	●	●	●	●			●	●
Dual release (drug combinations)	●	●	●	●	●	●	●	●	●
	Tablets			Multiparticulates					

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## Intrinsically enteric capsule technologies

Tailored capsules are directly manufactured using pharmaceutical grades of cellulosic enteric derivatives thereby providing an alternative to coating for enteric protection and/or delayed release. These encapsulation technologies are being utilized as rapid feasibility assessment and product development tools, product differentiation vs. coated products, and enabling the oral delivery of sensitive molecules, e.g. peptides, that require enteric protection but are sensitive to coating solutions and/or the high temperatures associated with conventional coating application.



## Liquid-filled hard capsules for colonic delivery

The combination of a reliable colonic targeting technology and the delivery of drugs in a liquid dosage form using liquid fill technologies provides significant advantages for targeting the colon. Functional coating can either be a pH-sensitive mechanism or a combination of pH and enzymatic triggers, the choice of which is application-specific. Specialized equipment is in place to support capsule coating and liquid filling/banding from proof of concept through commercial scale production.



## Fixed-dose combinations

Fixed-dose combinations are increasingly being developed to improve therapeutic effect and patient compliance. Dual release profiles are also being developed for pulsatile or combination release functionality. At Lonza, our product development teams are well versed with varied approaches to achieve fixed-dose combinations or tailored release for drug combinations utilizing multiparticulate technologies (matrix and coating combinations), bi- and tri-layered matrices, or LFHC technology.

## Contact us

[pharma.lonza.com/contact](https://pharma.lonza.com/contact)



## Osmotic technologies

Osmotic tablet technology is a key extended release approach, and can ensure consistent drug release, or zero order release, independent of GI tract or fed/fasted conditions. Our product development teams utilize two osmotic tablet technologies: proprietary asymmetric membrane technology (AMT) and swellable core technology (SCT). Both technologies are osmotic/hydrostatic pressure driven and can be readily modified for immediate, delayed and customer release profiles as well as fixed-dose combinations.



## Multiparticulate technologies

Multiparticulates (MP) offer a range of benefits inclusive of predictive GI transit, broad applicability for many APIs, mitigation of dose-dumping concerns, and capability to deliver a broad range of drug release profiles. At Lonza, our product development teams utilize a range of MP technologies based on matrix and fluid bed layered approaches. Proprietary melt-spray-congeal technology is utilized for the production of lipid multiparticulates (LMP) providing a combination of extended release, taste-masking and solubility enhancement functionality.

**Learn more about how Lonza's modified and targeted delivery technologies can be utilized to optimize your compounds pharmacokinetic profile.**

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