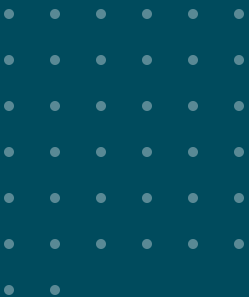




MISSION IMPULSEIBLE

MISSION BRIEFS

Industry-defined technical challenges for the
2026 Mission ImPULSEible student research program.



HIGH-PROTEIN SNACKS

BACKGROUND

CONCEPT SUMMARY

This brief targets high-protein snacks in extruded or baked formats, positioned for clean-label-conscious shoppers, GLP-1 medication users, and aging adults (55–65+) looking for functional nutrition in an everyday snack.

The core technical barrier is delivering a meaningful protein claim without the flavour and texture drawbacks that pulse-based proteins can create such as dry mouth and beany or bitter notes. Success depends on protein content, paired with the right flavour or seasoning strategy for the pulse source used, and a texture consumers will eat more than one bite of.

Teams have flexibility on format and process: any pulse isolate, concentrate, or flour can be used, and processing approach is open to the team's own ideas. The primary success metric is protein delivered per serving.

CONCEPT REQUIREMENTS

MARKET POSITIONING	Clean-label-oriented. Targets GLP-1 consumers and aging adults (55+) seeking functional nutrition.
TECHNICAL BARRIER TO ADDRESS	Delivery of high protein content while providing an enjoyable flavour and texture experience. Avoiding dry mouth and high beany or bitter flavour notes.
SUCCESS CRITERIA	Protein content (not a PDCAAS-adjusted figure), strong flavour pairing with the chosen pulse source, and good consumer acceptance of texture.
FAILURE CRITERIA	Inability to deliver acceptable flavour, or a texture too dense or difficult to eat more than a bite of.
NUTRITIONAL TARGET	10g or more of protein per serving.
INGREDIENT SCOPE	Pulse isolates, concentrates, and flours. Any pulse type may be used.
PROCESSING CONSTRAINTS	Open to the team's approach.
EVALUATION PRIORITY	Protein content per serving (highest priority).
ADDITIONAL NOTES	A dense texture is acceptable, provided it remains easy to eat.

CLEAR BEVERAGES

BACKGROUND

CONCEPT SUMMARY

This brief covers clear beverages in powder or ready-to-drink format, aimed at Gen Z consumers.

The technical challenge is maintaining visual clarity and a clean, mixable product while incorporating pea fibre — and potentially protein peptides — without sedimentation. Success means a clear, easy-to-shake product with a clean taste or effective natural flavour masking. Haze, an overly strong flavour, or sedimentation are considered failure. Concept beverages may be carbonated or caffeinated.

Flavour and nutrition benefits are the top evaluation priorities, and whether the protein content could support an energy claim is an open question worth exploring.

AT A GLANCE

MARKET POSITIONING	Convenience, targeting Gen Z consumers.
TECHNICAL BARRIER TO ADDRESS	Acceptable flavour and avoiding sedimentation.
SUCCESS CRITERIA	Visual clarity, a clean flavour or acceptable natural flavour masking.
FAILURE CRITERIA	Haze, an overly strong flavour, or sedimentation.
NUTRITIONAL TARGET	5g protein and 3g fibre per serving.
INGREDIENT SCOPE	Pea fibre; open to peptide or enzyme-treated protein approaches.
EVALUATION PRIORITY	Flavour and nutrition benefits (highest priority).
ADDITIONAL NOTES	Whether the protein content could support an energy claim is an open question.

HIGH-PROTEIN DIPS

BACKGROUND

CONCEPT SUMMARY

This brief targets concentrated, high-protein dips and sauces — distinct from hummus — designed around a defined pairing such as crackers, chips, or bread. The category is open to dairy- and non-dairy-based formulations, for a broad consumer base spanning party snacking to women's snacking occasions.

The technical question to address is how much protein can be incorporated while keeping a smooth, creamy texture and a flavour that complements its pairing. Grittiness and off-flavours — bitterness, aftertaste — are the main failure modes to avoid.

Shelf-stable formats, particularly pouches, are preferred over refrigerated. If bread is the intended pairing, carbohydrate content should be minimized.

AT A GLANCE

MARKET POSITIONING	High protein; dairy- and non-dairy-based; broad consumer base including party and women's snacking occasions.
TECHNICAL BARRIER TO ADDRESS	Maximizing protein content while maintaining an acceptable flavour and texture.
SUCCESS CRITERIA	Smooth, creamy texture and a pairing that complements the flavour and sensory experience.
FAILURE CRITERIA	Grittiness or off-flavours (bitterness, aftertaste).
NUTRITIONAL TARGET	10g protein per serving (± 2.5 g); stretch goal of added fibre if the formulation allows.
INGREDIENT SCOPE	Any pulses, whole or as ingredients.
PROCESSING CONSTRAINTS	Shelf stable, preferably in pouch format, rather than refrigerated.
EVALUATION PRIORITY	Nutrition target and flavour.
ADDITIONAL NOTES	If bread is the intended pairing, carbohydrate content should be minimized.



AMBIENT COOKING CREAM

BACKGROUND

CONCEPT SUMMARY

This brief targets a plant-based ambient cooking cream (15% fat) with a 12-month shelf-stable format processed through an existing commercial UHT line. The product must hold acceptable sensory quality throughout ambient storage, with full liquid oil (e.g. rapeseed) preferred and no emulsifiers.

The technical challenge is understanding how different pulse-derived ingredients influence lipid oxidation and rancidity development during ambient storage. Teams should identify pulse protein ingredients that provide functionality while minimizing oxidation catalysis.

Success means reduced oxidation versus a benchmark formulation, delayed onset of rancid or oxidized flavours, and stable sensory quality across shelf life.

AT A GLANCE

MARKET POSITIONING	Shelf-stable plant-based cooking cream with 12 months ambient shelf life and acceptable sensory quality throughout storage.
TECHNICAL BARRIER TO ADDRESS	How pulse-derived ingredients influence lipid oxidation and rancidity development during ambient storage.
SUCCESS CRITERIA	Reduced oxidation vs. benchmark; delayed onset of rancid/oxidized flavours; stable sensory quality throughout shelf life.
FAILURE CRITERIA	Accelerated oxidation vs. benchmark, or development of unacceptable rancid flavours during shelf life.
NUTRITIONAL TARGET	Low in saturated fat; full liquid oil preferred (e.g. rapeseed oil).
INGREDIENT SCOPE	Pulse protein flours, concentrates, and isolates.
PROCESSING CONSTRAINTS	Existing commercial UHT process; 15% fat cream formulation; ambient storage; no emulsifiers.
EVALUATION PRIORITY	Oxidative stability, then sensory quality and protein ingredient functionality.
ADDITIONAL NOTES	Particular interest in pulse ingredients that provide protein functionality while minimizing oxidation catalysis.

PLANT-BASED CREAM CHEESE

BACKGROUND

CONCEPT SUMMARY

This brief targets a plant-based cream cheese alternative (7% protein) with a fresh, dairy-like acidic flavour and a clean sensory profile, made through an existing plant-based cream cheese manufacturing process with a desired fermentation step.

To ensure product safety, the final pH must reach 4.2 — but the high buffering capacity of plant proteins makes this difficult to achieve without excessive acid addition, which produces an unbalanced sour taste and amplifies plant-related off-flavours.

Teams should focus on the relationship between protein composition, buffering capacity, and the sensory perception of acidity, while maintaining desirable texture and stability.

AT A GLANCE

MARKET POSITIONING	Plant-based cream cheese with fresh, dairy-like acidic flavour and clean sensory profile.
TECHNICAL BARRIER TO ADDRESS	Achieving pH 4.2 for safety without excessive acid addition producing unbalanced sourness and amplified off-flavours, due to the high buffering capacity of plant proteins.
SUCCESS CRITERIA	Reduced buffering capacity; reduced perceived acidity at equivalent pH; reduced plant off-notes and increased freshness; maintained texture and stability.
FAILURE CRITERIA	Limited improvement in acidity perception; negative impact on texture or water holding; increased off-flavours; sandiness or graininess.
NUTRITIONAL TARGET	Source of protein claim.
INGREDIENT SCOPE	Pulse protein flours, concentrates, and isolates.
PROCESSING CONSTRAINTS	Existing plant-based cream cheese manufacturing process; fermentation step desired.
EVALUATION PRIORITY	Acidity perception and buffering capacity reduction, then texture, creaminess/spreadability, and sensory.
ADDITIONAL NOTES	Focus on the relationship between protein composition, buffering capacity, and sensory perception of acidity.