

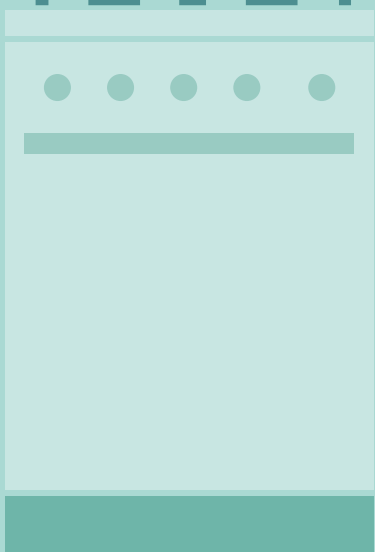
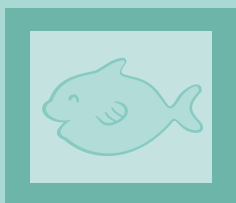
THE MANY SIDES OF GELATIN

*Versatility that
keeps on giving*



The difference is clear

Rousselot
Functional Ingredients





THE MANY SIDES OF GELATIN

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WHAT'S ALL THIS ABOUT GELATIN?

Did you know...



that gelatin is a food ingredient designed by nature, which helps to create healthy and clear label products that meet today's consumers' expectations? More on this later...

Let's start with the basics

This versatile ingredient has been around for generations and, despite being best known as a key component in your favorite childhood sweets, gelatin has many different uses which make it an almost magical ingredient.

WHAT IS IT?

An ingredient of natural origin, a pure protein and a hydrocolloid (a food texturant that is water soluble).

WHERE IS IT FROM?

Collagen, extracted from the skins and bones of animals raised for the meat industry.

WHAT DOES IT CONTAIN?

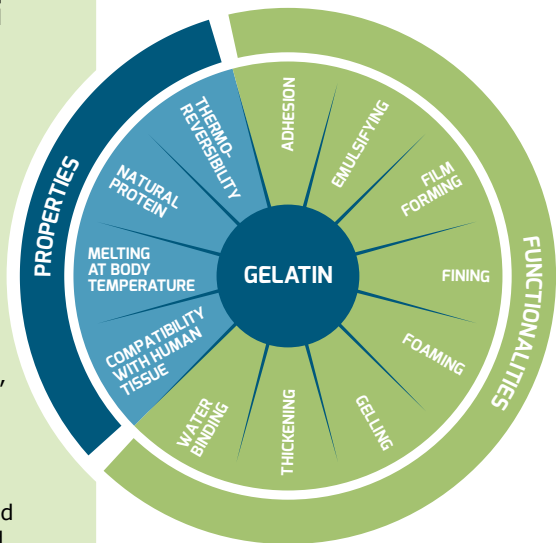
19 amino acids, 8 of the 9 which are essential for health.

WHAT IS IT *NOT*?

A food additive, full of e-numbers, cholesterol, or fat.

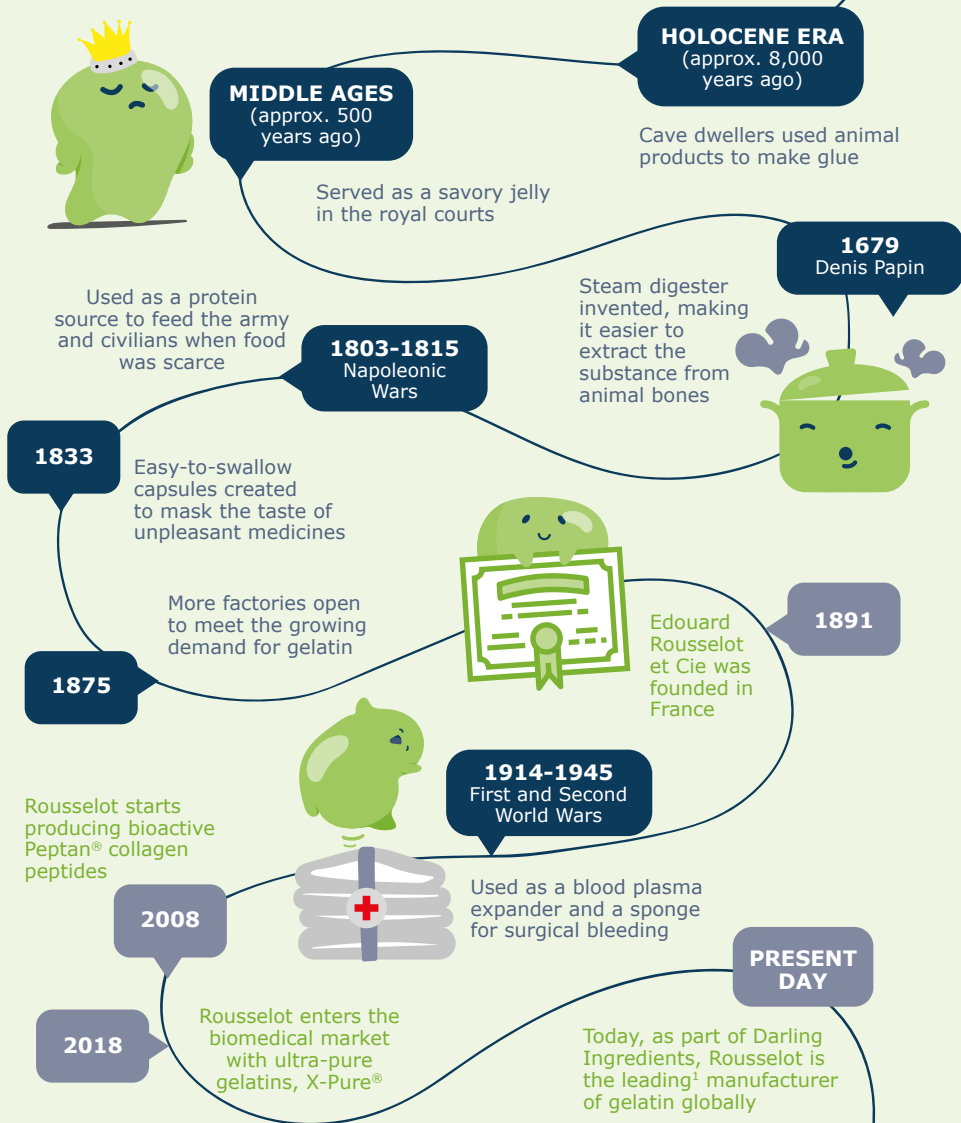
HOW IS IT USED?

In a number of ways thanks to all its numerous functionalities and properties, across food, nutra and pharmaceutical products, technical and biomedical applications.



FROM THE CAVES, TO NAPOLEON, TO SUPER

A NEVER-ENDING EVOLUTION



¹Global Industry Analysts, Inc, Gelatin a Global Strategic Business report, June 2018

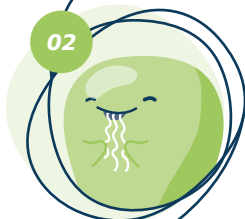
DON'T KNOW HOW GELATIN IS PRODUCED? READ ON

01



Gelatin is obtained through partial breakdown of collagen, a raw material found in the skin and bones of animals.

02



Depending on the raw material used and the characteristics required, gelatin can be produced either through an acid or alkaline treatment. After the hydrolysis stage, needed to make the collagen soluble, the next steps of the process are very similar; gelatin is extracted, sterilized, filtered and chilled. The result is a jelly noodle, which is then dried and ground into grains for storage.

03



A long and complex process which can take up to 3 months.

04



It's completely safe too. At Rousselot, our state-of-the-art production processes ensure that gelatin meets the highest standards across quality, safety and traceability. We also continuously look to expand and improve on these processes to consistently create products of the highest quality.



Did you know...

that you can produce your own gelatin at home by boiling meat/ fish with bones and/or skin? The resulting stock will naturally form a jelly when cooled.

SUSTAINABLE IS GELATIN'S MIDDLE NAME

*Did you
know...*



that gelatin contributes to reducing food waste and to a circular economy model?

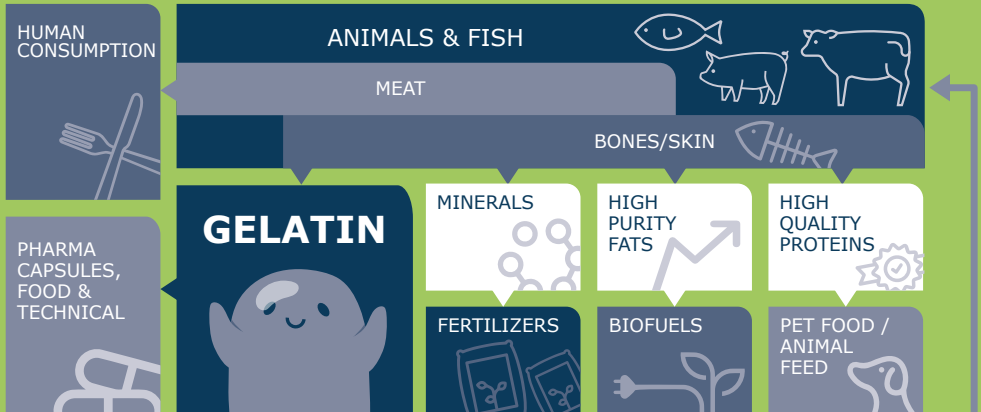
Popularity for more natural products without additives is on the increase, and not only that; people are more concerned about the impact of food production on the environment than ever before.

HOW DOES GELATIN FIT IN? TWO WORDS: ZERO WASTE

Originating from the meat processing industry, gelatin allows full usage of the animals intended for human consumption, reducing waste and therefore contributing to a zero-waste economy.

Following production and refinement, its by-products are also put to good use, as high-quality fats and proteins.

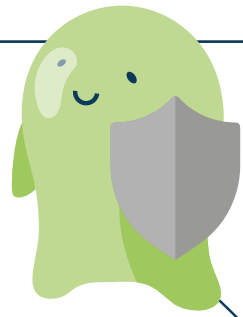
Other upcycling includes that of solid waste, used as an organic fertilizer.



Put simply: thanks to gelatin, all parts of the animal are put to good use, just like old times.



SAFETY ASSURED



From its raw form to the finished product, gelatin is a safe ingredient. And here's why:

SAFE ORIGIN

Of natural origin

Produced from animals intended for human consumption

Strict quality controls at raw materials stage

Suppliers undergo quality control audits

Full traceability up to the production site location

SAFE PROCESS

At least 100 controls during (Rousselot) production process

At the purification stage gelatin goes through filtration, centrifugation and sterilization for at least 4 seconds at 138°

SAFE INGREDIENT

Free of additives/e-numbers

GRAS status

Complies with the highest international and safety standards, validated by WHO, the European Commissioner for Health and Food Safety and the US FDA

HALAL & KOSHER, GELATIN FOR ALL NEEDS

Rousselot produces a wide variety of certified Halal and Kosher gelatins for which safety and traceability are of utmost importance. Our global quality policy covers traceability, high hygiene standards during manufacturing and packaging and compliance with all international quality standards. Our plants are regularly inspected by recognized religious bodies.

GELATIN NEED TO KNOW:

Not all bovine and fish gelatins are Halal and Kosher, so it's important to look for those that are certified by recognized religious bodies

ALWAYS CLEAR ON QUALITY

As the healthy eating trend keeps gaining momentum in the market, ingredients like gelatin help meet the clean/clear label guarantee that consumers expect.

Clean label¹

Relatively few and recognizable ingredients

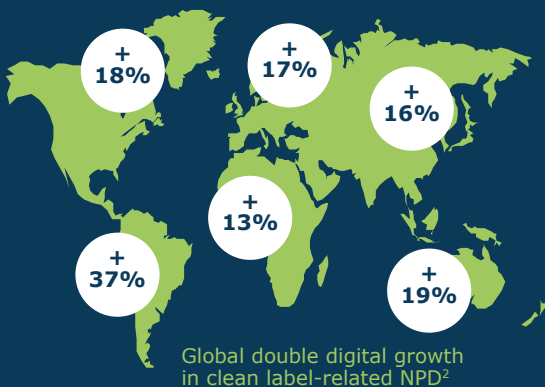
Absence of artificial or chemical ingredients

Sustainable ingredients

Naturally sourced ingredients

GELATIN IS CLEAR LABEL

**Clear label =
clean label + honesty above all¹**



¹Based on Euromonitor, 2016, Passport: clean label revolution

²Top Ten Trends for 2017, Innova Market Insights, Nov. 2016



SHORT INGREDIENTS LIST

It's not just where they come from, consumers are also looking to recognize the ingredients in their products and see shorter ingredient lists. Gelatin, a traditional ingredient of natural origin helps to replace additives with e-numbers. More on this topic on the functionalities page 11.

WHAT SHOULD YOU KNOW ABOUT GELATIN?

Some key properties to consider

IT'S A PROTEIN OF NATURAL ORIGIN

And so can be used to enhance the nutritional value of a food, beverage or nutraceutical product

IT MELTS AT BODY TEMPERATURE

Offering an enhanced eating experience with excellent texture and flavor release, perfect for gummies, marshmallows and pharma capsules

IT'S THERMO-REVERSIBLE

Meaning it's easy to use in industrial applications, with reversible transition from gel to liquid and vice versa without changing the characteristics of the gelatin

IT'S COMPATIBLE WITH HUMAN TISSUE

Making it perfect for in-body applications, such as plasma replacers or stabilizers for vaccines and as surgical sponges. Specific and highly purified grades are used in this instance

IT'S TRANSPARENT

And so helps to create beautiful end products, from jelly, to gummies and softgel capsules. Because looks matter too!



WHAT CAN GELATIN DO FOR YOU?

Gelatin's huge application potential means that it remains a go-to product for manufacturers and consumers alike, with limited clean label alternatives available in the market. Let's explore a few of the ways it can be used...

FOR THE PERFECT JELLY SWEETS

Gelling

Helping to create a wide range of confectionery, from chewy jellybeans to the softest gummy bears

Available at all gelling strengths (bloom values) for all types of confectionery



FOR BRINGING INGREDIENTS TOGETHER

Water-binding and adhesion

Preventing syneresis in dairy products

Binds up to 10 times its weight in water, making it the ingredient of choice for water jelly, a famous dessert in some parts of the world

FOR AERATED TEXTURES

Foaming

Creating lots of small bubbles
Delighting the senses with stable, light and airy textures in products like mousses or marshmallows



FOR BLENDING LIQUIDS

Emulsifying

Taking two unmixable liquids and making a dispersion of droplets of one into the other

FOR A PROTECTING FILM

Film-forming

Used in the manufacturing of capsules and coating confectionery, protecting the product inside



FOR ENHANCING TEXTURE

Stabilizing

Helping to create a stable system in particular in aerated products like marshmallows and dairy mousses

FOR A SILKY-SMOOTH OR THICKER TEXTURE

Thickening

Helping to achieve low or reduced-fat foods without compromising on taste



FOR MAKING IT CLEARER

Fining

Precipitating the natural haze-forming constituents in wine and other beverages while settling

YOUR FAVORITE CHILDHOOD SWEETS

Gelatin is famed for its use in confectionery, helping sweet manufacturers achieve the best consistency, texture and flavor release.

WHAT MAKES IT SO GOOD?



WHAT CAN I MAKE USING GELATIN?

Marshmallows as light as air with a melt in the mouth consistency

Perfect for innovation, our functional gelatins open up opportunity for exploration of new flavors, low-sugar or savory marshmallows.



Chewy candies with the perfect chewability

Gelatin can help you achieve the best chewy candy texture, from soft to hard, and chewy to less chewy.

FOR HEALTHIER CONFECTIONERY

Confectionery is more than just sweets however, as the demand for gummies increases in the nutraceutical market. Gelatin provides the perfect foundation for these functional gummies, offering space for additional health benefits, such as vitamins, minerals or collagen.

GELATIN NEED TO KNOW:

Traditional gummies are produced with starch mogul machines. Although very practical, this production process represents a potential risk of cross-contamination between active principles in nutraceutical applications. However, thanks to the new Rousselot SiMoGel™ gelatin, the gelation of gummies can happen in a starch-free, completely hygienic environment. This innovation also allows for the creation of innovative shapes such as 3D gummies.

DYNAMIC DAIRY

Dairy with the most enjoyable smooth and creamy texture.

TELL ME MORE...

Did you know...



that dairy manufacturers all across the world use gelatin to reduce the fat and sugar content of their products, while also improving the look, flavor and texture?



MOUSSE

Ever wondered why mousse has such an airy, light texture? It's due to gelatin's foaming, stabilizing and water-binding properties, giving this desired effect.



YOGURT

Looking to achieve a bright appearance and consistent texture without water separating and appearing on the top? Gelatin is widely used in yogurt products for its ability to bind ingredients and create a smooth end product.



QUARK AND DESSERT CREAMS

Want to retain that smooth and silky texture in your dairy products? Gelatin's water-binding and texturizing properties allow for this and stability over time.



ICE CREAM AND WATER ICES

Keep finding crystals forming in your iced products? Gelatin can prevent crystal growth over time, along with slowing the melting rate.

GELATIN'S MOTTO?

VARIETY IS EVERYTHING

And it's not just sweets and dairy. Gelatin is used by manufacturers and chefs around the world to improve recipes. Below are just a few of its applications.

MEAT AND FISH LOVERS LISTEN UP

As a pure animal protein, gelatin is a natural complement to meat-based products, including cooked pressed ham, meat emulsions and canned meat products

EVERYONE'S FAVORITE DESSERTS

Fast setting and transparent in color, gelatin is used extensively in water jellies and celebrated for its ability to enhance brightness



LIKE WINE?

Gelatin has been used in the clarification or fining of wine since the Roman civilization. And it's not just wine, gelatin is used to reduce the cloudy quality in beer too. All without leaving any trace of gelatin in the finished drink



Did you know...

that cooking meat with the skin on is a great source of collagen?

THOUGHT IT WAS JUST FOOD? THINK AGAIN

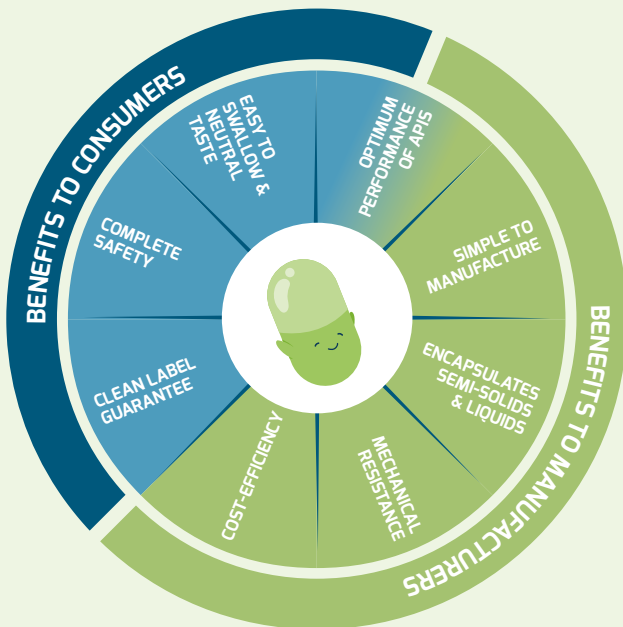
Did you
know...



25% of capsules worldwide are sourced with Rousselot gelatin?

When it comes to pharma and nutraceuticals, people are looking for delivery forms that are easy to swallow and ensure effective content release, so it's no wonder that soft gels and hard capsules are so popular. As demand also increases for clean label and natural ingredients, gelatin is the only excipient that adheres to the definition, with other excipients like HPMC and modified starch being the result of a chemical synthesis process and so classified as additives.

WHY USE GELATIN FOR HARD CAPSULES & SOFT GELS?



COMBATING CHALLENGES

Gelatin is the go-to ingredient for producing clean label soft capsules, due to its functional capabilities and dissolution properties. But when working with specific fills in soft gel manufacturing, cross-linking issues/alteration of the gelatin can occur, negatively affecting the stability of the capsule and the release of its contents.

This is not the case anymore, as new Rousselot StabiCaps™ solutions are designed to reduce crosslinking and increase capsule stability.

NEVER COMPROMISING ON QUALITY

In 2014, we expanded our horizons by becoming part of Darling Ingredients, a global leader in the production of sustainable organic ingredients derived from agricultural, industrial and food by-products. For more than 100 years they have helped protect the food and feed chains, while keeping people and animals safe and benefiting both businesses and the environment.

ROUSSELOT'S PRODUCTION GUARANTEES:



Everything occurs under **strict hygiene** conditions



All raw materials undergo **rigorous testing** to ensure quality and safety



Full traceability on all raw materials and process conditions

WE CONSISTENTLY MEET THE HIGHEST STANDARDS

So, you can rest easy in the knowledge that we'll always produce **world-class gelatin** products, of the **highest quality** and meeting **sustainability** standards.

AVOIDING WASTE

And it's not just our products that are sustainable. It's our processes too.

We have implemented water and energy reduction plans across our plants.





WE INVEST TO INNOVATE

From the latest technologies to advanced automation systems, we're always investing in our future, so we can invest in and add value to yours.



FULL COMPLIANCE IS A GUARANTEE

As part of Darling Ingredients, we comply with all applicable environmental, health and safety laws and regulations. Our systems ensure all our raw materials are traceable and any equipment we use is fully compliant with international food and pharmaceutical standards.

AT ROUSSELOT, WE INVEST TO IMPROVE

RECIPES

COOKING WITH GELATIN

From gourmet kitchens across the world to the comfort of your own kitchen, gelatin's versatility means it can be used in a wide variety of recipes. Here are a couple of examples to whet your appetite, taking you from the traditional classics to innovative desserts.

OIL-FREE MAYONNAISE FROM THE FRENCH CHEF JEAN-FRANÇOIS PIÈGE

Type of dish: A condiment or sauce

Difficulty level: Easy

Preparation time: 5 minutes

Rest time: 1 hour



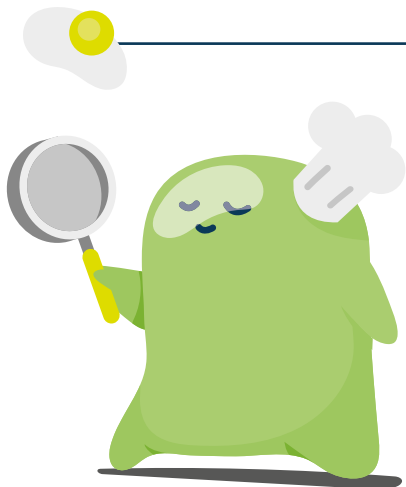
INGREDIENTS: FOR ONE BOWL

4 gelatin leaves or
8g of powder gelatin
300ml of vegetable stock
1 tbsp of strong mustard
1 egg yolk
1 tbsp of white wine
vinegar
(or lemon juice)
A pinch of salt

METHOD:

Add the gelatin powder to the vegetable stock, warm through and set aside to cool
When a jelly-like consistency mix until smooth
In a separate bowl, add the mustard, egg yolk and vinegar and mix together
Add the jelly to the mix and blend until you have a creamy texture
Add a pinch of salt to finish





Panna cotta...

...the world-famous traditional Italian dessert, literally translates as 'cooked cream'. Invented in the region of Piedmont in Italy, it is a simple mixture of sweetened cream and gelatin. A good panna cotta is one that is only just set but can still stand unsupported once out of the mould.

AN EVERGREEN: PANNA COTTA

Type of dish: Dessert

Difficulty level: Easy

Preparation time: 20 minutes

Rest time: 3 hours

INGREDIENTS:

300ml of cream

200ml of milk

60g of sugar

1 vanilla pod

2 gelatin leaves,
softened in cold water
or 4g of powder gelatin

METHOD:

Scrape the seeds from the vanilla pod and add it to a saucepan with the milk, cream and sugar

Warm over a low heat, don't let the milk get to boiling temperature

Remove from the heat and dissolve the gelatin

Pass through a fine sieve and leave to cool to room temperature, stirring every few minutes

Once cool, stir one last time and leave to set for at least 3 hours in the fridge

ROUSSELOT FUNCTIONAL INGREDIENTS

At Rousselot Functional Ingredients we offer the food, pharmaceutical and technical industries an extensive portfolio of world-class gelatins, manufactured through state-of-the-art operations with an unwavering commitment to quality, safety and sustainability.

IN FOOD OUR GELATINS:

are
clear
label

enhance
the texture,
appearance and
consistency
of many
products

are
extremely
versatile, making
them ideal for
use in different
products

are fat,
carbohydrate
and **additive-
free**

IN PHARMA OUR GELATINS:

are
completely
safe

are used
to make hard
capsules, soft gels,
functional
gummies and
tablets

OUR GELATINS ARE ALSO USED IN

- **medical applications** including blood plasma volume replacers and colostomy bags
- **technical applications** including photography, (micro) encapsulation, electrochemical plating and many more

 @RousselotFi

 Rousselot

rousselot.com/functional

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