

QUORUM SENSING PEPTIDES: THE MISSING LINK BETWEEN MICROBIOME AND DISEASE?

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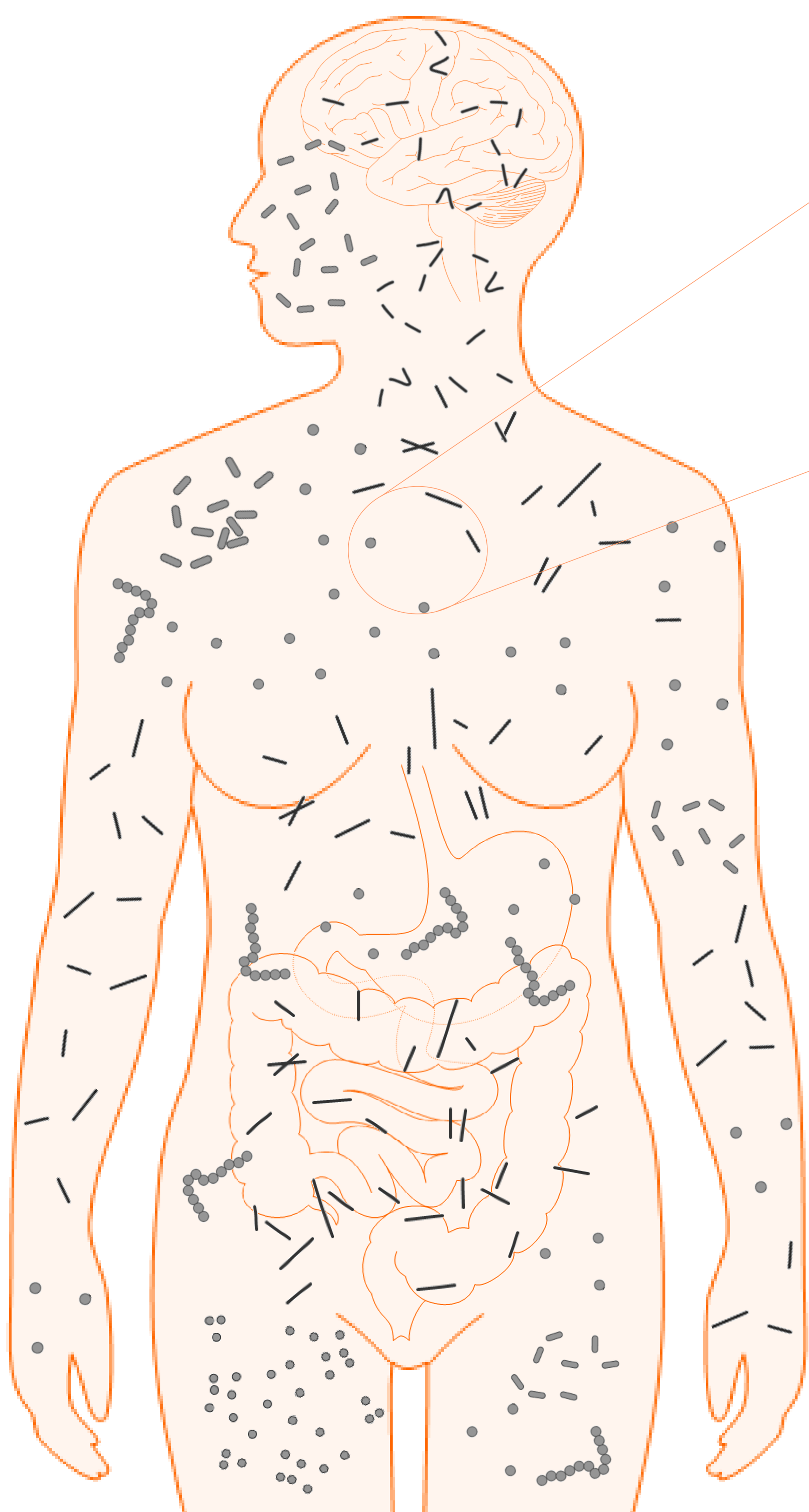
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INTRODUCTION

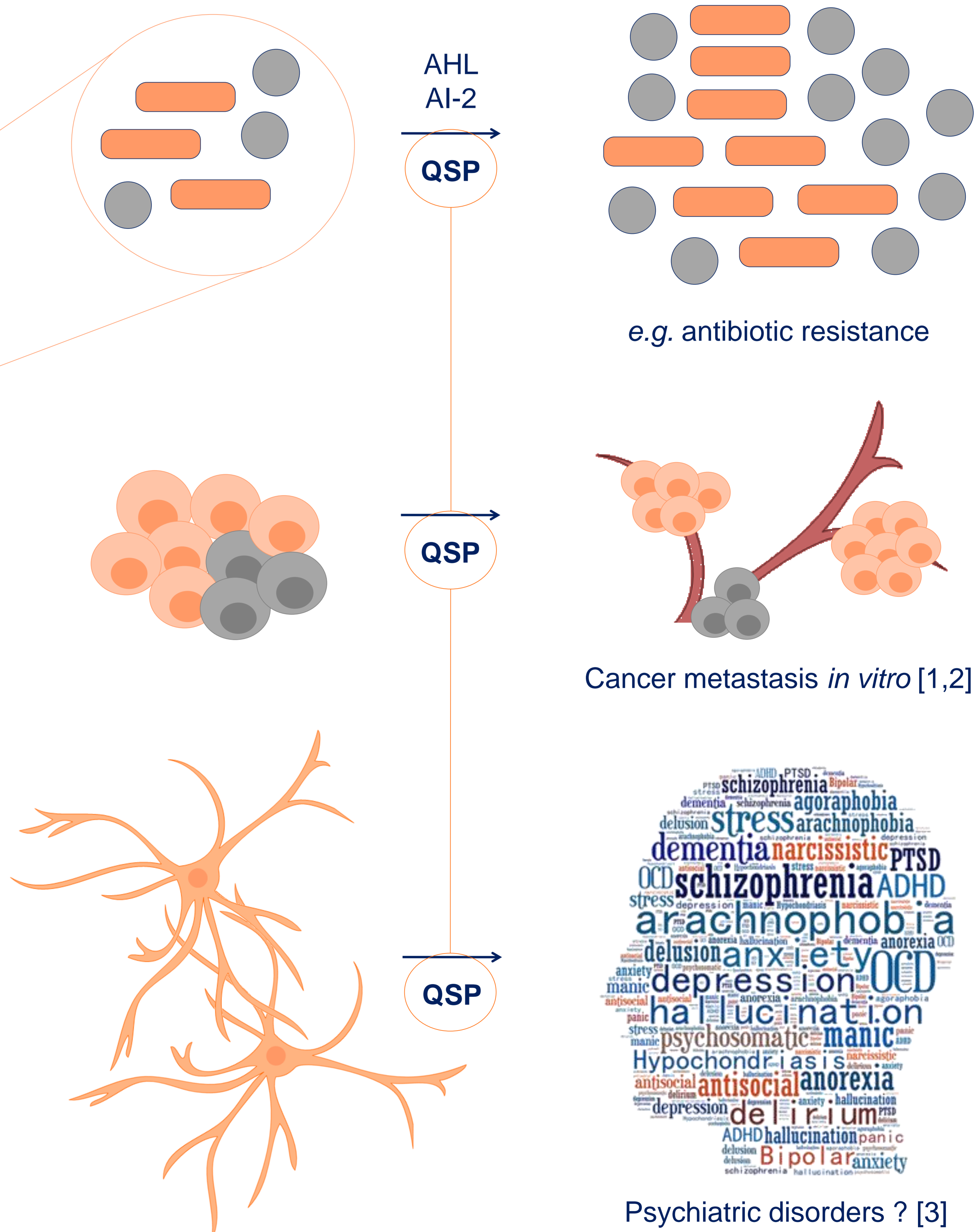
The human microbiota, the collection of trillions of microbes in and on the human body, has already been indicated to be beneficial for health. Commensal gut bacteria for example supply nutrients, help metabolizing indigestible compounds and defend against colonization by opportunistic pathogens or damage by dietary toxins and carcinogens. However, the alteration of the human microbiota composition can be associated with different diseases as well: *e.g.* psoriasis, colorectal cancer, gastric adenocarcinoma and autism were found to be linked to several bacterial compounds. One specific group of bacterial compounds are the quorum sensing peptides (QSP), communication molecules between mainly Gram-positive bacteria. In our laboratory, we investigate the role of these QSP in different diseases by using both *in vitro* and *in vivo* studies.

OVERVIEW

MICROBIOME



QUORUM SENSING



Quorum sensing peptides induce (breast and colon) cancer cell invasion and angiogenesis *in vitro*, thereby potentially influencing cancer metastasis. Moreover, due to their permeability through the blood-brain barrier, these peptides can affect the central nervous system as well, which may be linked to different psychiatric disorders. *In vivo* mice experiments will now be performed to confirm our obtained *in vitro* results.



CONCLUSIONS

REFERENCES

- [1] De Spiegeleer B, *et al.* The quorum sensing peptides PhrG, CSP and EDF promote angiogenesis and invasion of breast cancer cells *in vitro*. *Plos One* 2015, 10.1371/journal.pone.0119471. [2] Wynendaele E, *et al.* Crosstalk between the microbiome and cancer cells by quorum sensing peptides. *Peptides* 2015, 64, 40-48. [3] Wynendaele E, *et al.* Quorum sensing peptides selectively penetrate the blood-brain barrier. *Plos One* 2015, 10.1371/journal.pone.0142071.