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|  <p>Faculté de Santé Publique</p> | <p>Département de la Recherche Scientifique</p> <p><b>Présentation des Laboratoires de Recherche</b></p> <p>Laboratoire Microbiologie Santé et Environnement</p> | Edition: 02                |
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The “**Laboratoire Microbiologie Santé et Environnement (LMSE)**” - Health and Environment Microbiology Laboratory - is a research laboratory affiliated to the Doctoral School of Science and technology and the Faculty of Public Health at the Lebanese University, the only public institution for higher education in Lebanon.

LMSE was created in 2011 under the leadership of Prof. Monzer Hamze and is currently staffed by a group of experts in the field of medical and food microbiology including 3 professors, 7 assistant professors, 2 MD and hospital practitioner, 6 technicians, 1 administrative employer and 5 current PhD students.

LMSE research activities cover a wide variety of microbiology fields, including COVID-19, tuberculosis, antimicrobial resistance, probiotics and antimicrobial peptides, immunity and infections, parasitic diseases, molecular typing, applied bioinformatics, and natural bioactive substances.

LMSE is now a well-recognized laboratory in the field of surveillance of infectious diseases in Lebanon. Its activities strengthen the understanding of the complexity of microbial diseases and the monitoring of their national dynamics to provide epidemiological data used for national prevention and care plan. LMSE is accredited by the Lebanese Ministry of Public Health to be the reference laboratory for COVID-19, tuberculosis and antimicrobial resistance in North Lebanon. It is also in active and fruitful collaboration with several Lebanese healthcare facilities to which it provides advanced diagnostic services. In cooperation with health authorities and national and international expertise, the LMSE also contributes to promote the quality of healthcare services by organizing specialized training workshops on diagnostics of infectious diseases. On the other hand, the LMSE is in strong cooperation with international health organizations and research institutions including the World Health Organization, International Organization for Migration and Merieux Foundation. Also, the LMSE is an active member in the Gabriel network.

### General information:

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| <b>Full legal name of the institution</b> | Lebanese University   |
| <b>Name of the laboratory</b>             | Laboratoire Microbiologie, Santé et Environnement   |
| <b>Faculties</b>                          | Doctoral School in Science and Technology - Faculty of Public Health                                    |
| <b>Director</b>                           | Pr. Monzer Hamze<br>+961 3 228881<br><a href="mailto:mhamze@monzerhamze.com">mhamze@monzerhamze.com</a> |
| <b>Scientific committee</b>               | Pr. Fouad Dabboussi (PhD)<br>Pr. Ahmad Shahin (PhD)<br>Dr. Mohamad Bachar Ismail (PhD)                  |
| <b>Researchers</b>                        | Dr. Azzam Al Wili (PhD)<br>Dr. Hassan Mallat (MD)   |



Département de la Recherche  
Scientifique

**Présentation des Laboratoires de Recherche**

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|                     | Dr. Khaled El Omari (PhD)<br>Dr. Ahmad Kamaledine (MD)<br>Dr. Imad Al Kassaa (PhD)<br>Dr. Rayane Rafei (PhD)<br>Dr. Dima El Safadi (PhD)<br>Dr. Marwan Osman (PhD)                 |
| <b>Technicians</b>  | Mr. Taha Abdou (MS)<br>Mrs. Mariam Yehya (MS)<br>Mrs. Imane Darwish (BS)<br>Ms. Sara Amrieh (MS)<br>Ms. Asmaa Allouch (MS)<br>Mrs. Clara Khairallah (MS)<br>Mr. Nazih Lazkani (MS) |
| <b>PhD students</b> | Mrs. Salma Khaled<br>Ms. Rim Bayaa<br>Mrs. Samah Mechemchani<br>Mrs. Dalal Nour<br>Ms. Dina Daaboul  |

**LMSE team:**

| Number of staff in the laboratory  | in 2021                     |
|------------------------------------|-----------------------------|
| <b>Scientists:</b>                 |                             |
| PhD                                | 10                          |
| MD                                 | 2                           |
| Student (PhD or Master's students) | 5 PhD and 8 master students |
| <b>Technicians</b>                 | 6                           |
| <b>Administrative</b>              | 1                           |
| <b>Other (specify)</b>             | 0                           |

**Primary functions:**

Medical services

Research


**Clinical access to the patients:**

Direct

Indirect

**Topics of focus:**

- COVID-19
- Molecular typing and applied bioinformatics

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- Tuberculosis
- Antimicrobial resistance
- Immunity and infections
- Parasitic diseases
- Microbiota, probiotics and antimicrobial peptides
- Natural bioactive substances

### **Platform and services provided to the Lebanese Ministry of Public Health and health community in North Lebanon:**

- Laboratory BSL2<sup>+</sup> for tuberculosis and COVID-19 diagnosis.
- Nominated by the Lebanese Ministry of Public Health as one of the national reference laboratories to diagnose COVID-19 infection.
- Reference laboratory for conventional and molecular techniques in the diagnosis of tuberculosis and drug susceptibility testing in North Lebanon (Susceptibility and resistance profiles of TB isolates).
- Maintain the quality assurance for bacterial analysis for medical laboratories in North Lebanon.
- Collect and type clinical isolates of *Salmonella*, *Shigella* and *Escherichia coli* obtained from severe diarrhea in North Lebanon.
- Collect bacterial isolates resistant to 3<sup>rd</sup> and 4<sup>th</sup> cephalosporin generations and carbapenem.
- Diagnosis of viral and bacterial infections by using molecular tools.

### **Technical strengths:**


- Conventional culture of bacterial pathogens (including tuberculosis).
- Cellular culture.
- Identification of bacterial and fungi pathogens by phenotypic and biochemical tools (including MALDI-TOF MS).
- Antimicrobial Susceptibility Testing and phenotypic interpretation.
- Microscopic examination of parasites in stool samples.
- Concentration techniques for stool examination.
- Conventional staining for bacterial and parasitic pathogens.
- DNA/RNA extraction from biological and environmental samples.
- Conventional and real time uniplex or multiplex PCR assays (for detection of pathogens including COVID-19 and tuberculosis, antimicrobial resistance genes, mutations, and virulence factors).

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- Random amplified polymorphic DNA, pulsed-field gel electrophoresis and multiplex PCR analysis for typing of microbial isolates.
- Serotyping.
- Whole Genome Sequencing analysis of microbial genomes and plasmids.
- Sequence collection from NCBI databases and Uniprot.
- Phylogenetic analysis.
- Development of an online tool to directly identify the *Shigella* species and serotype from Whole Genome Sequencing.
- Routine enzyme-linked immunosorbent assay (ELISA) to determine the seroepidemiological prevalence of different infectious diseases and/or the immune status of the population against some vaccine-preventable infectious diseases.
- Interferon Gamma Release Assay (IGRA): QuantiFERON-TB Gold Plus test, used to investigate tuberculosis infection.

### Current Research projects:


- Characterization of SARS-CoV-2 circulating lineages and determination of COVID-19 seroepidemiology among Lebanese citizens and Syrian refugees in North Lebanon.
- HINTT - Evaluation of a new immunological diagnostic tool (QFT-P+HBHA) and identification of candidate biomarkers useful for monitoring the efficacy of tuberculosis treatment.
- Evaluation of the expression of catalase-peroxidase, an isoniazid-drug activating enzyme, and drug efflux pumps in clinical drug resistant and susceptible *Mycobacterium tuberculosis* isolates.
- Etiologic and clinical characterization of community acquired gastroenteritis in Lebanese patients by the FilmArray GI panel.
- Molecular epidemiology of Group A Streptococci isolates in Northern Lebanon.
- Study of the prevalence of primary resistance to antibiotics in *Helicobacter pylori* isolated from Lebanese patients.
- Genomic analyses of the population structure of *Shigella* and *Neisseria* species.
- Genome sequence of a multidrug-resistant *Campylobacter coli* strain isolated from newborn suffering from severe diarrhea in Lebanon.
- Molecular detection of the common protozoal parasitic infections among Lebanese population and Syrian refugees in North Lebanon.
- Study of the psychosocial burden of cutaneous leishmaniasis in Syrian refugee settings.
- Evaluation of the serological prevalence of several infectious diseases in different specific populations in North Lebanon.

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- Determination of the prevalence of latent tuberculosis infection in at-risk citizens and refugees in North Lebanon.
- Detection of tuberculosis in northern Lebanon, including MDR- and XDR-TB.
- Psychobiotic effect of Lactobacillus strains.
- Encapsulation of enzymes and antimicrobial substances to fight against biofilm in food industry.
- Valorization of probiotics in Crohn's patients in the presence of genetic mutations in autophagy and immunity genes.
- Search for natural bioactive substances.
- Development of LABiocin database: a specialized database for bacteriocins from Lactic acid bacteria.
- Surveillance of antimicrobial resistance in North Lebanon using a One Health Approach.


#### **Publications (2016-2021):**

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3. Osman M, Bidon B, Abboud C, Zakaria A, Hamze B, Achcar ME, et al. Species distribution and antifungal susceptibility of Aspergillus clinical isolates in Lebanon. *Future Microbiol.* 2021;16:13-26.
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5. EL Omari K, AL Kassaa I, Farraa R, Najib R, Alwane S, Chihib NE, et al. Using the Essential Oil of Micromeria barbata Plant as Natural Preservative to Extend the Shelf Life of Lebanese Yogurt. *Pak J Biol Sci.* 2020;23:848-55.
6. Chedid C, Kokhraidze E, Tukvadze N, Banu S, Uddin MKM, Biswas S, et al. Relevance of QuantiFERON-TB Gold Plus and Heparin-Binding Hemagglutinin Interferon- $\gamma$  Release Assays for Monitoring of Pulmonary Tuberculosis Clearance: A Multicentered Study. *Frontiers in immunology.* 2020;11:616450.
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11. Chedid C, Kokhreizze E, Tukvadze N, Banu S, Uddin MKM, Biswas S, et al. Association of baseline white blood cell counts with tuberculosis treatment outcome: a prospective multicentered cohort study. *Int J Infect Dis*. 2020;100:199-206.
12. Osman M, Al Bikai A, Rafei R, Mallat H, Dabboussi F, Hamze M. Update on invasive fungal infections in the Middle Eastern and North African region. *Braz J Microbiol*. 2020:1-19.
13. Ismail MB, Nour D, Raad G, Osman M, Rafei R, Mallat H, et al. First data on latent tuberculosis infection in Syrian refugees with diabetes in Lebanon. *Public Health*. 2020;189:97-100.
14. Osman M, Halimeh FB, Rafei R, Mallat H, Tom JE, Raad EB, et al. Investigation of an XDR-Acinetobacter baumannii ST2 outbreak in an intensive care unit of a Lebanese tertiary care hospital. *Future Microbiol*. 2020;15:1535-42.
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88. Alwan S, El Omari K, Soufi H, Zreika S, Sukarieh I, Chihib N, Jama C, Hamze M. Evaluation of the Antibacterial Activity of *Micromeria barbata* in Lebanon, *Journal of Essential Oil Bearing Plants.* 2016, 19:2, 321-327.

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| <b>Adresse</b>  | Faculté de Santé Publique, Campus Pierre Gemayel, Fanar   |
| <b>Thèmes de Recherche</b>  | <p><b>Immunologie et développement vaccinal :</b></p> <ul style="list-style-type: none"> <li>- Mise au point d'un modèle de souris immunodéficiente humanisée prédictif de la réponse de l'Homme aux candidats vaccins.</li> <li>- Evaluation du potentiel vaccinal de différentes constructions innovantes basées sur des candidats vaccins antipaludiques ou anti cancéreux.</li> </ul> <p><b>Maladies à transmission vectorielle :</b></p> <ul style="list-style-type: none"> <li>- Dépistage des agents viraux (arbovirus et autres virus) neurotropes dans le Liquide céphalo-rachidien de patients libanais atteints de méningites aseptiques</li> <li>- Circulation de virus transmis par <i>Aedes albopictus</i> et les <i>Culex</i> vecteurs : distribution vectorielle, séroprévalence chez les humains et les hôtes réservoirs.</li> <li>- La Leishmaniose en Syrie : Identification des espèces et typage moléculaire</li> <li>- Les tiques du Liban : inventaire des espèces et dépistage des zoonoses liées.</li> </ul> |
| <b>Co-Responsables du Laboratoire</b>   | Hasnaa Bouharoun-Tayoun et Soulaïma Chamat  |
| <b>Membres du Laboratoire</b><br>(Préciser le statut : enseignant-chercheur plein temps ou temps partiel, doctorant, assistant de recherche...) | <p><b>Enseignants chercheurs :</b></p> <p>Nabil Haddad (plein temps)<br/>Stephanie Ghosn (temps partiel)<br/>Hanadi Saliba (temps partiel)</p> <p><b>Assistants de recherche :</b></p> <p>Catherine Nakhlé-Ghanem<br/>Najibé Bou Antoun-Achkar</p>  |
| <b>Collaborations/Partenariats</b>  | <p>-Vac4all, Paris, France</p> <p>-Laboratoire de Conception et d'Application de Molécules Bioactives, Université Strasbourg, France</p>  |


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|   | <p>-Laboratoire des arbovirus et Insectes Vecteurs, Institut Pasteur, Paris, France</p> <p>-Institut Pasteur, Tunis, Tunisie</p> <p>-Institut Pasteur d'Iran, Iran</p> <p>-Réseaux euro- méditerranéens : MediLabSecure et VectorNet</p> <p>-Walter Reed Biosystematic Unit, Maryland, USA</p> |
| <p><b>Principales publications des 5 dernières années</b></p>   |  |
| <p>1. <b>Renée Zakhia</b>, Alan P. Dupuis II, Fayçal Khodr, Mahdi Fadel, Laura D. Kramer, <b>Nabil Haddad</b> Evidence of West Nile circulation in Lebanon, <i>Viruses</i>, Accepted, Manuscript ID: viruses-1187761</p> <p>2. Balenghien, T., Alexander, N., Arnþórsdóttir, A.L., Bisia, M., Blackwell, A., Bødker, R., Bourquia, M., Boutsini, S., Carpenter, S., Colenutt, C., Culverwell, L., Cvetkovikj, A., Dascălu, L., De Regge, N., Dhollander, S., Elbers, A., England, M., Filatov, S., Garros, C., Goffredo, M., <b>Haddad, N.</b>, et al., 2020. VectorNet Data Series 3: Culicoides Abundance Distribution Models for Europe and Surrounding Regions. <i>Open Health Data</i>, 7(1), p.2. DOI: <a href="http://doi.org/10.5334/ohd.33">http://doi.org/10.5334/ohd.33</a></p> <p>3. Jourdain F, Samy AM, Hamidi A, Bouattour A, Alten B, Faraj C, Roiz D, Petrić D, Pérez-Ramírez E, Velo E, Günay F, Bosevska G, Salem I, Pajovic I, Marić J, Kanani K, Paronyan L, Dente MG, Picard M, Zgomba M, Sarih M, <b>Haddad N</b>, Gaidash O, Sukhiasvili R, Declich S, Shaibi T, Sulesco T, Harrat Z, Robert V. Towards harmonisation of entomological surveillance in the Mediterranean area. <i>PLoS Negl Trop Dis</i>. 2019 Jun 13;13(6):e0007314. doi: 10.1371/journal.pntd.0007314. PMID: 31194743; PMCID: PMC6563966.</p> <p>4. Bou Karroum N, Moarbess G, Guichou JF, Bonnet PA, Patinote C, <b>Bouharoun-Tayoun H</b>, <b>Chamat S</b>, Cuq P, Diab-Assaf M, Kassab I, Deleuze-Masquefa C. (2019.) Novel and Selective TLR7 Antagonists among the Imidazo[1,2-a]pyrazines, Imidazo[1,5-a]quinoxalines, and Pyrazolo[1,5-a]quinoxalines Series. <i>J Med Chem</i>. 8;62(15):7015-7031.</p> <p>5. Jourdain F, Picard M, Sulesco T, <b>Haddad N</b>, Harrat Z, Sawalha SS, Günay F, Kanani K, Shaibi T, Akhramenko D, Sarih M, Velo E, Paronyan L, Pajovic I, Faraj C, Sikharulidze I, Putkaradze D, Maric J, Bosevska G, Janceska E, Bouattour A, Hamidi A, Sherifi K, Alten B, Petric D, Robert V. Identification of mosquitoes (Diptera: Culicidae): an external quality assessment of medical entomology laboratories in the MediLabSecure Network. <i>Parasite and Vectors</i>. 2018. 23;11(1):553. doi: 10.1186/s13071-018-3127-7.</p> <p>6. <b>Ghosn S., S.Chamat</b>, E. Prieur, A.Stephan, P. Druilhe, <b>H. Bouharoun-Tayoun</b>. (2018). Evaluating Human Immune Responses for Vaccine Development in a Novel Human Spleen Cell-Engrafted NOD-SCID-IL2ryNull Mouse Model. <i>Front. Immunol</i>. 9:601.</p> |  |


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7. Els Ducheyne, Nhu Nguyen Tran Minh, **Nabil Haddad**, Ward Bryssinckx, Evans Buliva, Frédéric Simard, Mamunur Rahman Malik, Johannes Charlier, Valérie De Waele, Osama Mahmoud, Muhammad Mukhtar, Ali Bouattour, Abdulhafid Hussain, Guy Hendrickx and David Roiz (2018). Current and future distribution of *Aedes aegypti* and *Aedes albopictus* (Diptera: Culicidae) in WHO Eastern Mediterranean Region. *International Journal of Health Geography*, 17:4
8. **Zakhia R**, Mousson L, Vazeille M, **Haddad N**, Failloux A-B (2018). Experimental transmission of West Nile Virus and Rift Valley Fever Virus by *Culex pipiens* from Lebanon. *PLoS Negl Trop Dis* 12(1): e0005983.
9. Fakih D, Akiki Z, Junker K, Medlej-Hashim M, Waked M, Salameh P, Holmskov U, **Bouharoun-Tayoun H**, **Chamat S**, Sorensen GL, Jounblat R. (2018) Surfactant protein D multimerization and gene polymorphism in COPD and asthma. *Respirology*. 23(3):298-305.
10. **Saliba H**, Heurtault B, **Bouharoun-Tayoun H**, Flacher V, Frisch B, Fournel S, **Chamat S** (2017). Enhancing tumor specific immune responses by transcutaneous vaccination, *Expert Rev. Vaccines*, 16:11, 1079-1094.
11. Akiki Z, Rava M, Diaz Gil O, Pin I, le Moual N, Siroux V, Guerra S, **Chamat S**, Matran R, Fitó M, Salameh P, Nadif R. (2017). Serum cytokine profiles as predictors of asthma control in adults from EGEA study. *Respir Med*. 125:57-64.
12. Failloux, A.-B., Bouattour, A., Faraj, C., Gunay, F., **Haddad, N.**, Harrat, Z., Jancheska E., Kanani K., Kenawy M.-A., Kota M., Pajovic I., Paronyan L., Petric D., Sarih M., Sawalha S., Shaibi T., Sherifi K., Sulesco T., Velo E., Gaayeb L., Victoir K. & Robert, V. (2017). Surveillance of Arthropod-Borne Viruses and their Vectors in the Mediterranean and Black Sea Regions within the MediLabSecure Network. *Current Tropical Medicine Reports*. *Curr Trop Med Rep*. 2017;4(1):27-39. doi: 10.1007/s40475-017-0101-y. Epub 2017 Mar 17.
13. Akiki Z, Fakih D, Jounblat R, **Chamat S**, Waked M, Holmskov U, Sorensen GL, Nadif R, Salameh P. (2016). Surfactant protein D, a clinical biomarker for chronic obstructive pulmonary disease with excellent discriminant values. *Exp Ther Med*. 11(3):723-730.



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| <b>Thèmes de Recherche</b>  | <ul style="list-style-type: none"> <li>- Surveillance Pharmaco-épidémiologique</li> <li>- Alimentation optimale des 1000 premiers jours de la vie</li> <li>- Promotion de la santé :             <ul style="list-style-type: none"> <li>o Etude des actions et analyse des pratiques d'intervention dans le domaine socio-médical</li> </ul> </li> <li>- Famille, parentalité, et approches psycho-sociales</li> </ul>  |
| <b>Responsable du Laboratoire</b>   | Nabil Haddad, Professeur, Plein temps   |
| <b>Membres du Laboratoire</b><br>(Préciser le statut : enseignant-chercheur plein temps ou temps partiel, doctorant, assistant de recherche...) | Nadine Saleh, Professeur, Plein temps<br>Marie-Thérèse Sabbagh, Professeur-associé, Plein temps<br>Christiane Saliba, Professeur-associé, Plein temps<br>Karine Issa, Professeur-associé, Plein temps<br>Rouba-Karen Zeidan, Professeur associé, temps partiel<br>Mira Hleihel, Professeur associé, temps partiel<br>Danielle Saadeh, Professeur associé, temps-partiel<br>Nathalie Lahoud, Professeur associé, temps-partiel<br>Christine Azar, doctorante<br>Rita Nohra, doctorante<br>Sally Yaacoub, doctorante<br>Rola Bou Serhal, doctorante |
| <b>Collaborations/Partenariats</b>  | ANSM et Paris Est<br>Paris Descartes<br>Paris Sud<br>Paris Saclay   |

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### Principales publications des 5 dernières années

2016

Saliba Sfeir C. (2016). *Recours aux soins et Couverture Médicale au Liban*. Editions L'Harmattan, collection Logiques Sociales, Paris.

Salem L, Saleh N, Désaméricq G, Youssouf K, Dolbeau G, Cleret L, Bourhis ML, Azulay JP, Krystkowiak P, Verny C, Morin F, Moutereau S; French Huntington Study Group., Bachoud-Lévi AC, Maison P. Insulin-Like Growth Factor-1 but Not Insulin Predicts Cognitive Decline in Huntington's Disease. *Plos One*, 2016.

Désaméricq G, Youssouf K, Charles P, Saleh N, Olivier A, Sherer-Gagou C, Verny C; multidisciplinary working group., Bachoud-Lévi AC. Guidelines for clinical pharmacological practices in Huntington's disease. *Journal of neurology*, 2016.

Nathalie L, Pascale S, Nadine S, Hassan H. Reply to the commentary of Dr. Josué Lily Vidal: Paper: Prevalence of Lebanese stroke survivors: A comparative pilot study. *J Epidemiol Glob Health*, 2016.

P Salameh and N Saleh. Knowledge, Attitudes, Beliefs and Practice regarding antibacterial resistance and appropriate use of ATBs in EMRO region: A systematic review, WHO 2016.

Zeidan, R. K., Farah, R., Chahine, M. N., Asmar, R., Hosseini, H., Salameh, P., & Pathak, A. Prevalence and correlates of coronary heart disease: First population-based study in Lebanon. *Vascular Health and Risk Management*, 2016.

Zeidan, R. K., Farah, R., Chahine, M. N., Asmar, R., Chahine, R., Salameh, P., Pathak, A., & Hosseini, H. Predictors of Uncontrolled Blood Pressure in Treated Hypertensive Individuals: First Population-Based Study in Lebanon. *Journal of Clinical Hypertension (Greenwich, Conn.)*, 2016.


2017

Zeitouny M, Feghali M, Nasr A, Abou Samra P, Saleh N, Bourgeois D, Farge P. SoproLife system: an accurate diagnosis enhancer. *The scientific world Journal*, 2017.

Lahoud N, Abbas M, Saleh N, Salameh P, Hosseini H and Gebeily. A retrospective analysis of 254 acute stroke cases admitted to two university hospitals in Beirut: Classification and associated factors. *Functional Neurology*, 2017.

2018

Saliba C. (2018). « Attitudes, perceptions et usage des antibiotiques à Beyrouth et Mont Liban ». *Journal de l'Association Libanaise de Thérapies Comportementales et cognitives*. n°3. mars, p. 37-45

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| <b>Thèmes de Recherche</b>  | Trois principaux axes de recherche sont développés au sein de laboratoire: <ul style="list-style-type: none"> <li>• Biomolécules</li> <li>• Biothérapie</li> <li>• Bioprocédés .</li> </ul> Développement de nouvelles molécules, nouvelles thérapies et nouveaux procédés |                                  |
| <b>Responsable du Laboratoire</b>   | Hiba Mawlawi   |                                  |
| <b>Membres du Laboratoire</b>   | <b>Nom et prénom</b>   | <b>Statut</b>                    |
| 10 enseignants (plein temps )<br>2 enseignants ( contrat )<br>9 doctorants<br><br>7 Assistants de recherche | Hiba Mawlawi   | Enseignant-chercheur plein temps |
|   | Asma Chbani  | Enseignant-chercheur plein temps |
|   | Samir Taha   | Enseignant-chercheur plein temps |
|   | Ziad Fajloun   | Enseignant-chercheur plein temps |
|   | Dania Awad   | Enseignant-chercheur plein temps |
|   | Hala Chamieh   | Enseignant-chercheur plein temps |
|   | Ziad abed Razzak   | Enseignant-chercheur plein temps |
|   | Samar Hamoui   | Enseignant-chercheur plein temps |
|   | Achraf Kouzayha  | Enseignant-chercheur plein temps |
|   | Hoda Bitar   | Enseignant-chercheur plein temps |
|   | Rawaa Abdallah   | Enseignant-chercheur             |
|   | Zeina Dassouki   | Enseignant-chercheur             |
|   | Jacinth Franjeih   | Doctorant cotutelle france       |
|   | Mariam Rifi  | Doctorant codirection AUB        |



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|                                    | Bariaa Nafeh   | Doctorant Codirection AUB  |
|                                    | Ghazal Khaled  | Doctorant cotutelle France |
|                                    | Mirna El Hage  | Doctorant cotutelle France |
|                                    | Maria Batoul   | Doctorant cotutelle France |
|                                    | Carole Yaacoub   | Doctorant cotutelle France |
|                                    | Dina Alabyad   | Doctorant cotutelle France |
|                                    | Mureille Farech  | Assistante de recherche    |
|                                    | Salma Halawani   | Assistante de recherche    |
|                                    | El Mostapha Ahmad  | Assistante de recherche    |
|                                    | Rayan Chahal   | Assistante de recherche    |
|                                    | Kawssar Badra  | Assistante de recherche    |
|                                    | Hanine Gech  | Assistante de recherche    |
|                                    | Halimeh Tabcheh  | Assistante de recherche    |
| <b>Collaborations/Partenariats</b> | <ul style="list-style-type: none"> <li>- Laboratoire de Chimie Agro-Industrielle. ENSIACET. INP. <b>Toulouse</b>.</li> <li>- Université de <b>Strasbourg</b>-Institut de Chimie et Procédés pour l'Energie, l'Environnement et la Santé</li> <li>- American University of Beirut .</li> <li>- Université Chouaib-Doukkali .</li> <li>- Université Ibn Tofail 14000 Kenitra, <b>MAROC</b>.</li> <li>- University of <b>Angers</b> –Faculte de Medecine -. Laboratory of Neurovascular and Mitochondrial Integrated Biology</li> <li>- Université Pierre et Marie Curie -Institut de Biologie Paris Seine-Laboratoire Neurosciences Paris Seine</li> <li>- Université <b>Paris-Saclay</b> .</li> <li>- Institut du Thorax, Université de <b>Nantes</b>.</li> <li>- École Supérieure des Industries Alimentaires de <b>Tunis</b> (ESIAT).</li> <li>- l'Ecole Nationale Supérieure de Chimie de <b>Rennes</b></li> </ul> |                            |

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|   | - University of Picardie Jules Verne, Amiens, France |
| <b>Principales publications des 5 dernières années</b><br><b>4 Brevets</b><br><b>96 Publications</b>  |  |
| <p><b><u>Brevets d'invention :</u></b></p> <p>1- J. Guezennec, Y. Gueguen, E. Bachère, <b>A. Kouzayha</b>, C. Simon-Colin. <i>Nucléus enrobé d'un revêtement filmogène aux propriétés antibactériennes et cicatrisantes et procédé d'obtention</i>. <b>FR2964014B1; WO2012028826A1; AU2011298216; US20130152865A1; CN103260395B; JP6158083B2.</b></p> <p>2- J. Guezennec, C. Simon-Colin, <b>A. Kouzayha</b>, E. Bachère. <i>Nucléus recouvert de PHA</i>. <b>FR2968506B1; WO2012080660A1; CN103491769A; JP2014501522A; US20130263793A1.</b></p> <p>3- <b>Asma Chbani, Hiba Mawlawi</b>. <b>Brevet d'invention No. 10469</b> : Fabrication d'un produit biocide le LEMONBRELLA à partir d'une algue verte contre <i>Penicillium digitatum</i>, champignon responsable des moisissures des Agrumes.</p> <p>4- N. Sari-Chmayssem, <b>S. Taha , H. Mawlawi</b> , T. Benvegnu Procédé d'obtention de compositions tensioactives à base de L-Glucuronamides d'alkyle , <b>brevet d'invention</b> accepte en France Avril 2016</p> <p><b><u>PUBLICATIONS</u></b></p> <p><b><u>2021:</u></b></p> <p>1- Antioxidative, cytotoxic, and anti-metastatic potentials of Laurencia obtusa and Ulva lactuca seaweeds Reem Al Monla , Yahya Salma , Achraf Kouzayha , Hala Gali-Muhtasib, Zeina Dassouki, Hiba Mawlawi<br/> <b>Asian Pacific Journal of Tropical Biomedicine</b> 2021; 11</p> <p>2- The venom of the Lebanese viper, Montivipera bornmuelleri contains vasoactive compounds. Jacinthe Frangieh, J. Park, Ziad Fajloun, L. Quinton, R. Sadek, Daniel Henrion, Cesar Mattei, Christian Legros. May <b>2021</b>. <i>Archives of Cardiovascular Diseases Supplements</i> 13(2):191. DOI: 10.1016/j.acvdsp.2021.04.1083-</p> <p>3- Thiazolo[5,4-f]quinoxalines, oxazolo[5,4-f]quinoxalines and pyrazino[b,e]isatins: synthesis from 6-aminoquinoxalines and properties. Frederic Lassagne, Joshua M. Sims, William Erb, Olivier Mongin, Nicolas Richy, Nour El Osmani, Ziad Fajloun, Laurent Picot, Valerie Thiery, Thomas Robert, Stephane Bach, Vincent Dorcet, Thierry Roisnel and Florence Mongin. <b>European Journal of Organic Chemistry</b>, First published: 22 April <b>2021</b>. doi.org/10.1002/ejoc.202100362</p> <p>4- The Cytotoxic Effect of <i>Apis mellifera</i> Venom with a Synergistic Potential of Its Two Main Components—Melittin and PLA2—On Colon Cancer HCT116 Cell Lines. Carole Yaacoub; Mariam Rifi, Dany El-Obeid, Hiba Mawlawi, Jean-Marc Sabatier, Bruno Coutard and <b>Ziad Fajloun</b>. <b>Molecules</b> <b>2021</b>, 26, 2264. doi.org/ 10.3390/molecules26082264</p> <p>5- Snake venom components: tools and cures to target cardiovascular diseases Jacinthe Frangieh, Mohamad Rima, <b>Ziad Fajloun</b>, Daniel Henrion, Jean-Marc Sabatier, Christian Legros and Cesar Mattei. <b>Molecules</b> <b>2021</b>, 26(8), 2223; <a href="https://doi.org/10.3390/molecules26082223">https://doi.org/10.3390/molecules26082223</a></p> <p>6- The use of Pinus nigra as a biomonitor of pesticides and polycyclic aromatic hydrocarbons in Lebanon Firas Baroudi , Josephine Al-Alam, Olivier Delhomme, Supansa Chimjarn, Ziad Fajloun and Maurice Millet <b>Environ Sci Pollut Res Int</b>. 2021 Feb;28(8):10283-10291. doi: 10.1007/s11356-020-11954-y. Epub 2021 Jan 15.</p> <p>7- Bee venom PLA2 versus snake venom PLA2: evaluation of structural and functional properties Lara Bitar, Dania Jundi, Mohamad Rima, Jean-Marc Sabatier and Ziad Fajloun. <i>Venoms and Toxins Journal</i>, 10.2174/266612170199921010122503</p> |  |

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| <b>Thèmes de Recherche</b>        | Deux principaux axes de recherche sont développés au sein de laboratoire: <ul style="list-style-type: none"> <li>• Pollution chimique de l'eau et de l'environnement, Traitement et gestion des eaux et des Déchets, Biodiversité et écosystèmes. Responsable : Pr Jalal HALWANI.</li> <li>• Toxicologie, Environnement et Santé, Pollution du milieu aquatique par les Pesticides et les effluents industriels, Pollution atmosphérique. Responsable : Pr Moumen BAROUDI.</li> </ul> |                                    |
| <b>Responsable du Laboratoire</b> | Jalal HALWANI   |                                    |
| <b>Membres du Laboratoire</b>     | <b>Nom et prénom</b>  | <b>Statut</b>                      |
|                                   | HALWANI Jalal   | Enseignant-chercheur plein temps   |
|                                   | BAROUDI Moumen  | Enseignant-chercheur plein temps   |
|                                   | ZIADEH Fouad  | Enseignant-chercheur plein temps   |
|                                   | MOUNEIMNE Abdel Halim   | Enseignant-chercheur plein temps   |
|                                   | CHAMMAS Gisèle  | Enseignant-chercheur plein temps   |
|                                   | AMINE Hilmiya   | Enseignant-chercheur temps partiel |
|                                   | HAMZE Mariam  | Enseignant-chercheur temps partiel |
|                                   | BOUMEHREZ Odissa  | Enseignant-chercheur temps partiel |
|                                   | MERAB Mohammad  | Enseignant-chercheur temps partiel |
|                                   | MERHEBI Dima  | Enseignant-chercheur temps partiel |
|                                   | KABBARA Mohammad  | Enseignant-chercheur temps partiel |
|                                   | KEREK Racha   | Enseignant-chercheur temps partiel |

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|  | <table border="1"> <tr><td>HALWANI Chaza</td><td>Enseignant-chercheur temps partiel</td></tr> <tr><td>DASSOUKI Zeina</td><td>Enseignant-chercheur temps partiel</td></tr> <tr><td>HALWANI Bouchra</td><td>Enseignant-chercheur temps partiel</td></tr> <tr><td>CHBIB Chaza</td><td>Post Doc - France</td></tr> <tr><td>Al-HAJ Rachad</td><td>Doctorant</td></tr> <tr><td>Nadine El Wannay</td><td>Doctorante</td></tr> <tr><td>DAHER Sarah</td><td>Doctorante</td></tr> <tr><td>SAWAYA Rana</td><td>Doctorante</td></tr> <tr><td>BORGHOL Chaza</td><td>Doctorante</td></tr> <tr><td>AKOUCHE Nisreen</td><td>Doctorante</td></tr> <tr><td>EID Nadia</td><td>Assistante de recherche</td></tr> <tr><td>JAWAD Iman</td><td>Assistante de recherche</td></tr> <tr><td>BAKKOUR Hiba</td><td>Assistante de recherche</td></tr> <tr><td>ELETER Diana</td><td>Assistante de recherche</td></tr> </table> | HALWANI Chaza | Enseignant-chercheur temps partiel | DASSOUKI Zeina | Enseignant-chercheur temps partiel | HALWANI Bouchra | Enseignant-chercheur temps partiel | CHBIB Chaza | Post Doc - France | Al-HAJ Rachad | Doctorant | Nadine El Wannay | Doctorante | DAHER Sarah | Doctorante | SAWAYA Rana | Doctorante | BORGHOL Chaza | Doctorante | AKOUCHE Nisreen | Doctorante | EID Nadia | Assistante de recherche | JAWAD Iman | Assistante de recherche | BAKKOUR Hiba | Assistante de recherche | ELETER Diana | Assistante de recherche |
| HALWANI Chaza  | Enseignant-chercheur temps partiel   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| DASSOUKI Zeina   | Enseignant-chercheur temps partiel   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| HALWANI Bouchra  | Enseignant-chercheur temps partiel   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| CHBIB Chaza  | Post Doc - France  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| Al-HAJ Rachad  | Doctorant  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| Nadine El Wannay   | Doctorante   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| DAHER Sarah  | Doctorante   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| SAWAYA Rana  | Doctorante   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| BORGHOL Chaza  | Doctorante   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| AKOUCHE Nisreen  | Doctorante   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| EID Nadia  | Assistante de recherche  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| JAWAD Iman   | Assistante de recherche  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| BAKKOUR Hiba   | Assistante de recherche  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| ELETER Diana   | Assistante de recherche  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| <b>Collaborations/Partenariats</b>                                 | <ul style="list-style-type: none"> <li>- Université de Lille (France)</li> <li>- Université de Montpellier (France)</li> <li>- Université de Lorraine - Nancy, (France)</li> <li>- Aix-Marseille Université, (France)</li> <li>- Université Saint-Joseph (Liban)</li> <li>- American University of Beirut (Lebanon)</li> <li>- Beirut Arab University (Lebanon)</li> </ul>   |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
| <b>Principales publications des 5 dernières années (2017-2021)</b> |  |               |                                    |                |                                    |                 |                                    |             |                   |               |           |                  |            |             |            |             |            |               |            |                 |            |           |                         |            |                         |              |                         |              |                         |
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Faculté de Santé  
Publique

Département de la Recherche  
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## Présentation des Laboratoires de Recherche

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