

Supplementary Table S1. The exact coordinates of the sampling locations and the temperature recorded at the time of sampling

River	Coordonnates of the sampling locations	Temperatures in april 2017 in °C	Tempratures in january 2018 in °C
Janoubi Kabir	34° 38' 04'' N 35° 58' 42'' E	19	13
Ostuène	34° 36' 07'' N 35° 59' 24'' E	19	13
Aarqa	34° 32' 58'' N 35° 59' 30'' E	19	13
Al Bared	34° 30' 31'' N 35° 57' 42'' E	18	12
Qadicha	34° 26' 48'' N 35° 50' 47'' E	20	12
Ibrahim	34° 03' 54'' N 35° 38' 35'' E	20	13
Al Kaleb	33° 55' 61'' N 35° 58' 80'' E	19	13
Beyrouth	33° 54' 06'' N 35° 32' 18'' E	19	14
Damour	33° 42' 17'' N 35° 26' 36'' E	18	15
Al Awali	33° 35' 20'' N 35° 23' 12'' E	20	15
Zahrani	33° 29' 33'' N 35° 20' 34'' E	18	14
Litani	33° 55' 61'' N 35° 59' 80'' E	19	15

Supplementary Table S2. Significant variations ($p < 0.05$) of ARGs families in the rivers between spring and winter

	<i>Significant increase</i> (<i>p</i> value)	<i>Significant decrease</i> (<i>p</i> value)
Macrolides	Awali (<i>p</i> 0.028) Bared (<i>p</i> 0.018) Ostuene (<i>p</i> 0.043) Beirut (<i>p</i> 0.018) Kaleb (<i>p</i> 0.012) Zahrani (<i>p</i> 0.018)	Qadicha (<i>p</i> 0.036)
Aminoglycosides	Awali (<i>p</i> 0.002) Bared (<i>p</i> 0.016) Ostuene (<i>p</i> 0.002) Beirut (<i>p</i> 0.002) Kaleb (<i>p</i> 0.001) Aarqa (<i>p</i> 0.01) Janoubi (<i>p</i> 0.023) Zahrani (<i>p</i> 0.001)	Qadicha (<i>p</i> 0.03)
Tetracyclines	Awali (<i>p</i> 0.043) Bared (<i>p</i> 0.043) Ostuene (<i>p</i> 0.043) Beirut (<i>p</i> 0.043) Kaleb (<i>p</i> 0.043) Janoubi (<i>p</i> 0.043) Aarqa (<i>p</i> 0.043) Zahrani (<i>p</i> 0.043)	Qadicha (<i>p</i> 0.043) Damour (<i>p</i> 0.043)
β-Lactamase	Awali (<i>p</i> 0.03) Bared (<i>p</i> 0.018) Beirut (<i>p</i> 0.002) Kaleb (<i>p</i> 0.011) Aarqa (<i>p</i> 0.02) Janoubi (<i>p</i> 0.004)	Qadicha (<i>p</i> 0) Damour (<i>p</i> 0.025) Zahrani (<i>p</i> 0.012)
Heavy metals	Beirut (<i>p</i> 0.028) Kaleb (<i>p</i> 0.046)	
MGEs	Aarqa (<i>p</i> 0.07) Bared (<i>p</i> 0.021) Ostuene (<i>p</i> 0.005) Janoubi (<i>p</i> 0.021) Zahrani (<i>p</i> 0.038)	Qadicha (<i>p</i> 0.017)
Multi-drug efflux	Awali (<i>p</i> 0.043) Bared (<i>p</i> 0.043) Ostuene (<i>p</i> 0.043) Kaleb (<i>p</i> 0.043) Aarqa (<i>p</i> 0.043) Zahrani (<i>p</i> 0.043)	Qadicha (<i>p</i> 0.043)