Ton	ic occurrence	gastrointestinal	hepatic, pancreatic, biliary	mammary	neural	reproductive	respiratory	urinary	other
Puk	high moderate low  blication counts 10 100	esophagus large intestine stomach – diffuse–type gastric	biliary liver pancreas	mammary - triple-negative breast	brain other neural	cervix ovary prostate	lung - non-small-cell lung	bladder kidney – clear cell renal cell carcinoma – renal cell carcinoma	bone dermal lymphatic vascular unidentified
trend				•	• •		• •	• • · ·	• • • • •
	squamous cell carcinoma  patient-derived organoid	•	•						
model / source	patient-derived organoid patient-derived xenograft	•		•					
therapy	personalized medicine chemotherapy chemoresistance targeted therapy immunotherapy adoptive cell therapy immune checkpoint monoclonal antibody oncolytic virus radiotherapy radioresistance	:			•	• • •	•	• ·	
pharmacology	drug development drug testing drug delivery	•	• • •	0 0	•	•	•	•	
physiology	tumorigenesis cancer stem cell tumor heterogeneity tumor microenvironment hypoxia angiogenesis CAF metastasis EMT intra/extravasation circulating tumor cell microsatellite instability		. :		•	• •	•	• • • •	• • • •
immune cells	immune cells lymphocyte natural killer cell B cell T cell macrophages TAM neutrophil	:		•	::		:		
cellular process	apoptosis autophagy extracellular vesicles	•		• •	• •		•		•
techniques	gene editing genomics epigenetics transcriptomics scRNA seq proteomics mass spectrometry high-content analysis optical metabolic imaging	·		:	•				