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Title: Nanorobot communication techniques: a comprehensive tutorial

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Abstract: This work presents chemical communication techniques for nanorobots foraging in fluid environments relevant for medical applications. Unlike larger robots, viscous forces and rapid diffusion dominate their behaviors. Examples range from modified microorganisms to nanorobots using ongoing developments in molecular computation, sensors and motors. The nanorobots use an innovative methodology to achieve decentralized control for a distributed collective action in the combat of cancer. A communication approach is described in the context of recognize a single tumor cell in a small venule as a target for medical treatment. Thus, a higher gradient of signal intensity of E-cadherin is used as chemical parameter identification in guiding nanorobots to identify malignant tissues. A nanorobot can effectively use chemical communication to improve intervention time to identify tumor cells

Number of references: 29

Inspec controlled terms: cancer - chemical variables measurement - decentralised control - medical robotics - microrobots - nanobiotechnology - patient treatment - tumours

Uncontrolled terms: nanorobot communication - chemical communication - fluid environment - medical application - molecular computation - decentralized control - distributed collective action - cancer - medical treatment - signal intensity - E-cadherin - chemical parameter identification - malignant tissue identification - tumor cell identification - biomedical engineering - endothelial cell - nanomechatronic - nanomedicine - nanotechnology

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